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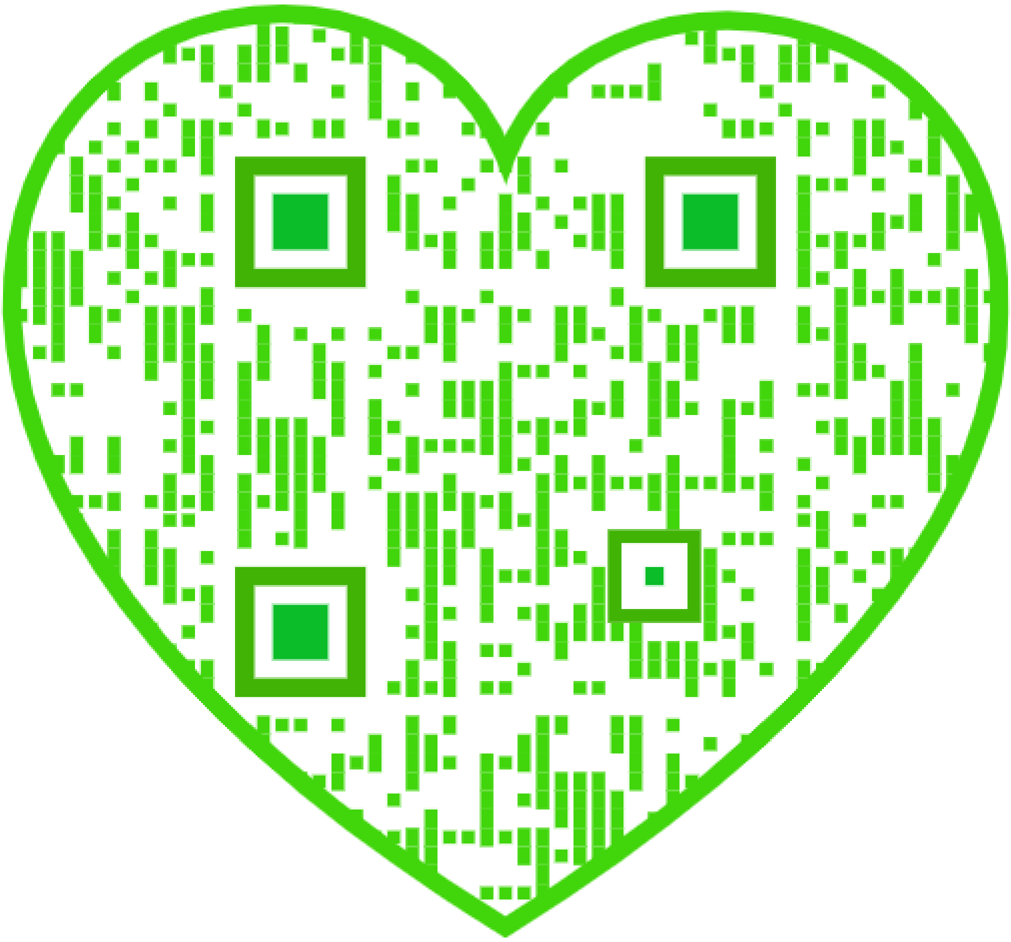

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Editor's lead in

When streaming services came along and changed how many of us consumed music, hi-fi electronics brands had to adapt; they had to accommodate. And they have done spectacularly. It's been a rather long road, but in recent years we have reached a supreme moment where hi-fi and streaming go together like cops and doughnuts. Today, we have music streamers, streaming amps and streaming-savvy all-in-one systems, from the affordable to the aspirational, that sound good and offer intuitive user experiences consistent with other parts of our technological lives.

Hi-fi manufacturers of such components have created software teams to a) develop their own control apps — apps that meet the high standards we have become accustomed to in today's app-driven world; b) grapple with audio transmission standards and protocols that can differ from one country they sell in to another; and c) facilitate the 'Big Tech' licensing agreements necessary for their products to implement, say, AirPlay — not always easy, as I've been told (several times). Their challenges probably extend beyond that, too.

In addition to control apps, they have implemented modern displays, allowing users to enjoy streaming to the full. Their streaming components now commonly tick off what has just about settled as an established set of streaming features. And they embrace the hi-res quality now offered by the likes of Tidal and Apple Music, while their engineers have had to learn new skills and find ways to harness streaming chipsets and well implement the architecture surrounding it (power supplies etc) to deliver true high-fidelity sound quality. Indeed, from where I'm standing, hi-fi and music streaming mostly live pretty harmoniously… save for the companies behind the two arguably most popular streaming methods somewhat letting the side down.

The first is Spotify. While several music services now offer the hi-res audio quality that pretty much every modern hi-fi streaming device plays ball with, the world's most popular one, which spawned the easiest streaming method out there (Spotify Connect), is limited to what is more or less the lowest quality audio still around (320kbps). Its promised higher-quality Spotify Hi-Fi tier is more than three years late, and while the CEO said some months ago that it's still coming, the latest of the often reliable *Bloomberg* reports (their sources? 'People in the know') suggest it will finally arrive later this year via a US$6 add-on package that could also throw in AI-driven song-remixing tools and perhaps some early gig ticket access. If those rumours hold any truth, that could take an individual subscription cost here in Australia to roughly $21, which is significantly more than Tidal and Apple Music — why would people switch? I hope Spotify has something truly competitive up its sleeve, but for now we wait.

The other fly in this particular ointment is Apple and its AirPlay streaming method. Like Spotify Connect, AirPlay 2 is a must-have feature for streamable hi-fi components, allowing iPhone and iPad users to stream any music playing on their device (either stored locally or in the cloud) to them. Unlike Spotify Connect, AirPlay needs the origin device (the iPad or iPhone) in order to work, so the music won't keep playing if you turn that off — but while an 'Apple Connect' solution would be preferable, that quirk is not what is truly disappointing. What is again relates to audio quality limitations.

Essentially, AirPlay is sometimes lossy (compressed) and sometimes lossless (not compressed), but even in the latter case that doesn't extend beyond 'CD-quality'. (Regular contributor Stephen Dawson has actually tested whether AirPlay (and other protocols) are actually 'bit-perfect' on page 55.) So there's no hi-res AirPlay transmission, despite Apple Music's catalogue heralding hi-res streams.

Being able to play hi-res streams within native streaming service apps and over Google Chromecast and DLNA is a great enabler of convenient, high-quality listening these days, but Spotify and AirPlay are widely adopted and it's a shame they are comparatively limited on the hi-res front.

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20 **Yamaha NS-2000A loudspeakers**
Yamaha's 50-odd years of experience in building hi-fi loudspeakers shines through the NS-2000A floorstanders, which look and sound fantastic while measuring excellently too.

28 **Marantz Model 60n streaming amplifier**
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58 **Technics SL-1300G turntable**
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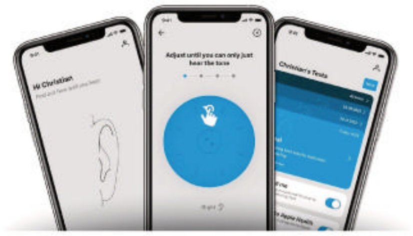
Sennheiser HD 505 headphones; Pro-Ject AC/DC turntable; Presto music streaming service; Piega Premium Gen 2 loudspeakers; McIntosh DS200 streaming DAC; plus the best of the UK's Bristol Show 2025 product launches — the Rega Brio amplifier, FiiO FT7 headphones, Musical Fidelity B1xi integrated amplifier and B1xCD player, Fyne Audio F500S loudspeakers, Wilson Benesch Horizon loudspeakers, Meze Audio The Poet headphones, Neat Acoustics Iota II loudspeakers, WiiM Vibelink Amp integrated amplifier, Michell Audio Apollo phono stage and Muse power supply.


Hi Christian
Adjust until you can only just hear the tone
Christian's Tests

33 Handy hi-fi apps

Six useful mobile apps for audiophiles that are free to download and could supercharge your hi-fi experience.

35 Australian Hi-Fi Show 2025 guide

Sydney's premier hi-fi and AV show returns to the Sydney Central Hotel in April to give audiophiles and tech enthusiasts the opportunity to see and hear the latest and greatest audio and video products from Australia and the rest of the world. Here's what you can expect to see, brand by brand.

51 Hi-Fi Primer

Experts from major wireless headphone brands discuss the pains and gains of implementing one of the most prevalent technologies in the market today — active noise cancellation.

55 An exploration into bit-perfect streaming

Following his investigation into whether Tidal was truly lossless, Stephen Dawson turns his attention to how 'bit-perfect' streaming over popular protocols such as AirPlay really is.

3 Editor's Lead-In

When streaming services came along and changed how we consumed music, hi-fi electronics brands had to adapt; they had to accommodate. And they did so spectacularly. It's just a pity two of tech's giants are somewhat letting the side down.

BLACK EYED SONS
cowboys in pinstriped suits
The Verve
verve

Music

80 Best bass tracks

Whether you are listening to a stereo system or a decent pair of headphones, you are in your car or testing one of the best subwoofers, this selection of bass test tracks will help you figure out how your set-up handles those tricky low frequencies.

82 Top Picks

The Verve's compilation album is reissued for its 20th anniversary; G3 and Iggy Pop belie their ages for impressive live albums; established British rock'n'rollers evolve into Black Eyed Sons for their new-band debut; and Andy Fairweather Low releases his first solo blues album.

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dsd
22.6 MHz

62 High-End Review #1

Digital-to-analogue conversion doesn't get much more distinguished than this. Audiophiles with big digital music libraries and even bigger wallets should take this Greek company very seriously indeed.

KWA 99
0
25
50
75
100
Power
Watts
PWR

66 High-End Review #2

Wonderful monoblock amplifiers inside and out, by a US brand whose name is a portmanteau of the founder's surname and his earliest profession in audio. Care to guess?

VINYL INNOVATION
Technics deck is engineered to the nines
FULL Australian Hi-Fi Show 2025 guide inside
australian
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PLUG 'N' PLAY PERFECTION
Just add speakers to Marantz's skilled streaming amp
THE WHOLE SHEBANG!
Revolutionary all-in-one system has reviewers raving

OUR FRONT COVER

Modern-day convenience dominates this issue's cover, with Marantz and Dutch & Dutch backing hi-fi set-ups with high-tech concepts and low box counts.

Brooklyn meets Brazil

Grado has added a second model to its nascent Signature headphones series, the Signature S950, which follow the Signature HP100 SE ($3,999) released last year.

Grado has used wood extensively across several of its most recognisable headphones, including the GS1000X Statement, RS1x and RS2E Reference cans, so its incorporation of Brazilian walnut for the new S950's ear cups is a return to familiar territory and presents a balance in the series, with the existing Signature pair sporting aluminium housings for an equally traditional Grado look. The Brooklyn-based manufacturer says this wood material not only makes for a lighter construction (just 395g) but also offers what it describes as a "relaxed musical presentation".

The Signature S950 use an incarnation of Grado's 52mm S driver, originally designed for the first Signature model. Grado strove to create a drive unit that would deliver "exceptional high-frequency detail, a smooth midrange, and powerful bass," all while keeping distortion levels at a minimum for pinpoint accuracy.

Each new driver deploys a paper composite cone paired with a high-flux magnetic circuit, as well as a copper-plated aluminium voice coil. Grado claims the magnetic circuit and voice coil combine to enhance the headphones' dynamic reproduction while delivering a "refined sense of space, soundstage, detail and imaging".

The Signature S950's updated stainless steel headband includes 50% more padding than earlier Grado models for extra comfort, while its adjustable height rods allow for typically generous fit adjustments. The headphones are also equipped with a six-foot 6.3mm-terminated cable that connects to the ear cups using 4-pin balanced mini XLR plugs. Grado is offering varying lengths of detachable cable options in the future, with 4-pin balanced XLR and 4.4mm balanced terminations available, granting owners greater choice depending on their personal preference and source choice.

Grado's Signature S950 are available now for $3,799.

For more information, contact BusiSoft AV on (03) 9810 2900 or visit www.busisoft.com.au

McIntosh
DS200 STREAMING DAC
Bluetooth
Connected
60%
INPUT
PUSH - SETUP
NETWORK
STREAMING CONTROLS

Streaming simplicity

What do you prioritise: sound quality or convenience? You may well have pledged your allegiance to the former as soon as your brain computed that question, and with good reason. But for many, the ideal set-up prioritises both performance and practicality. That certainly isn't a given, even in today's streaming-savvy hi-fi world, but McIntosh claims that its new DS200 streaming DAC majors on both.

This source component is aimed at owners of higher-end systems (McIntosh-branded or otherwise) who are looking for a suitably skilled streaming component to complete it. For them, the DS200 could be the final link in the chain.

While it's instantly recognisable as a McIntosh product thanks to its black glass front face plate, rotary control knobs, illuminated logo and custom-machined aluminium end caps, it functions like no McIntosh product before it. Unlike the company's previous streaming components, the DS200 doesn't contain a hard-drive for storing music; you simply 'cast' music to it from the cloud using, say, the Spotify or Tidal app. Indeed it works with all the major streaming apps and technologies, like Spotify Connect, Tidal Connect, AirPlay 2 and Google Cast. Bluetooth comes via an antennae, as does wi-fi, although Ethernet is onboard for that more stable and preferred wired network connection. The streamer can also be voice-controlled via Google Assistant, so long as you have another Google Assistant-compatible device on the same network.

The D200 is also compatible with the Roon music management platform (it's Roon Ready and has Roon Tested certification too), which may be a particularly tempting route to go down here as McIntosh doesn't offer its own control app. While you may consider that a disadvantage, McIntosh is going for simplicity here.

Streaming aside, the DAC has eight digital audio inputs that support hi-res audio, including DSD512 and DXD up to 384kHz via USB, and 24-bit/192kHz via coax and optical inputs. The HDMI ARC socket, meanwhile, converts your TV's Dolby and DTS multi-channel audio into two-channel audio. And balanced and unbalanced analogue inputs are also present and correct. While it's factory-set in fixed output mode, its output can be switched to variable so that it can connect directly to a power amplifier and control the volume itself, bypassing the need for a preamplifier.

Inside is a quad-balanced 8-channel 32-bit DAC McIntosh claims delivers a "huge dynamic range and low distortion," aiming to deliver "superior sound reproduction" from your digital music library.

The McIntosh DS200 streaming DAC costs $8,995.

For more information, contact Synergy Audio Visual on (03) 9459 7474 or visit www.synergyaudio.com

The Hi-Fi Headlines

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NEWSLETTER NO.270

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McIntosh
C12000 CONTROLLER
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McIntosh C12000 Pre-Amplifier

Price: $29,900

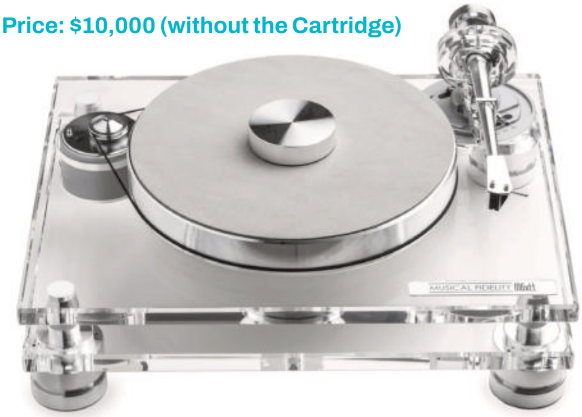
The McIntosh C12000 Pre-Amplifier is a two-chassis masterpiece designed for the ultimate in sound purity. With its separate power and control unit, this pre-amp delivers unrivalled clarity and precision.

Featuring 12 analogue inputs, including six balanced and four unbalanced, plus two adjustable phono inputs, the C12000 offers flexibility for any audio setup.

Its vacuum tube and solid-state outputs ensure a rich, dynamic soundstage—perfect for the discerning audiophile.

Musical Fidelity M6xTT Turntable

Price: $10,000 (without the Cartridge)



Experience vinyl like never before with the Musical Fidelity M6xTT Turntable.

This precision-engineered turntable boasts a heavy aluminium platter, a 10-inch tonearm, and a dual-layer plinth for exceptional stability and vibration control.

The M6xTT delivers stunning detail and warmth, making it the ideal choice for vinyl enthusiasts looking to rediscover their record collection with breathtaking fidelity.

Bowers & Wilkins Cashback Promotion

From 1 March to 31 May 2025, elevate your audio setup with Bowers & Wilkins 700 or 800 Series speakers and take advantage of this incredible offer! Here's what you'll receive:

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Scan the QR Code to claim your cashback, which will be sent as a digital EFTPOS card for use anywhere EFTPOS is accepted. Your free headphones will be included with your speaker order—it's that simple!

Why Upgrade?

Now is the perfect time to enhance your audio experience with these world-class products. The McIntosh C12000 and Musical Fidelity M6xTT bring cutting-edge technology and timeless design to your home, while the Bowers & Wilkins promotion offers unbeatable value. Don't miss out—the cashback offer ends 31 May 2025!

For more details on these exciting new arrivals or to explore the Bowers & Wilkins promotion, visit our showroom or head to lenwallisaudio.com.

Per-second streaming payouts

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EXPLORE
Composers
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TOM
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Tom and Will

While the convenience of online streaming platforms such as Spotify, Apple Music and Tidal are hugely attractive to everyday listeners, they aren't without their problems. The lack of hi-res streaming on Spotify aside, many mainstream services have come under fire for how little they tend to pay their artists — not such a problem for Taylor Swift, but a bigger issue for artists who don't pull in millions of streams per year.

That's where Presto Music comes in. The streaming platform, which launched in 2023 and is now an established albeit niche force, focuses predominantly on classical and jazz music, with around 200,000 albums currently listed alongside over 70,000 digital booklets. With many tracks available to stream in 24-bit/192kHz, the catalogue is accessible via the Presto Music app (desktop and mobile), the web player and compatible music streamers using the BluOS platform (such as Bluesound Node or Cyrus 40 ST).

Much of the appeal of Presto Music comes from its remuneration model. Via its Fair Play initiative, Presto promises to pay up to 10 times more per album than its lowest-paying competitors, paying artists per second of music streamed rather than using the 'per play' model of most rival platforms. That averages out at a lot more cash for artists, especially in the case of classical and jazz recordings where each individual track is typically substantially longer than more mainstream pop, rock or hip-hop tunes.

A listen to Théotime Langlois de Swarte's rendition of Vivaldi's Concerti Per Una Vita, for example, highlights the disparity between pay per second and pay per play. One listen to the album on Spotify in the UK, for instance, generates £0.135 for the artist, whereas through Presto Music it will recoup £1.058.

Having launched its Fair Play initiative, Presto Music also wants to ensure that higher revenues actually make it to the artists themselves. Presto says it is investigating the accuracy of information held by Collecting Societies — the organisations that allocate royalties to composers and performers — to ensure the money goes to the right place.

According to Chris O'Reilly, Presto Music's Chief Executive: "Our data makes it plain just how unfair the 'pay per play' model is when it comes to a big chunk of classical repertoire, especially orchestral music, which is also typically expensive to record. To ensure the future viability of our industry it needs to pay fairly. We're doing that and hope others will start doing so as well."

Subscriptions to a standard Presto Music streaming plan start at $14.99 per month here in Australia. This offers access to 200,000 albums in hi-res quality (up to 192kHz) and 70,000 booklets, plus offline listening. A 'Streaming Plus' plan, meanwhile, costs $20.99 per month and includes a 10% discount on all Presto purchases.

The service also hosts a wonderful and frequently populated blog written by music experts to keep you clued up on what you are listening to, while there is also a music download store and a webstore for sheet music, books and instruments.

For more information, visit
www.prestomusic.com/streaming

A lasting legacy

Sennheiser has been one of the leading lights in the affordable open-back headphone market for decades, and its latest pair looks to further lock down that legacy. The HD 505 are new additions to the company's 500 Series, which has previously included acclaimed models such as the HD 599 and HD 560S, and which sits below the 600 Series of HD 600 fame.

SENNHEISER
HD 505

The HD 505 cost $449.95, putting them in the firing line of established competition such as the Beyerdynamic DT 900 Pro X. They also sit between Grado's acclaimed SR80x and SR325x in price. So while wired headphones may not be as popular in the affordable headphones sphere as they once were, there is still plenty of competition for the new Sennheisers here.

Bidding to overcome those challengers, the HD 505 feature a custom 120-ohm driver within their open-back frame, produced at the company's factory in Tullamore, Ireland. Sennheiser says the driver can deliver a frequency response between 12 to 38,500Hz and has a THD (total harmonic distortion) level of less than 0.2%. Sennheiser's engineers have angled the drivers to replicate the triangular positioning of a set of nearfield loudspeakers, supposedly to deliver an expansive yet compelling soundstage.

Ensuring those drivers can perform to their best is a headphone chassis that includes a synthetic leather headband and metal mesh earcup covers, the overall weight coming in at a respectable and comfort-friendly 237g. Sennheiser has traditionally kept its wired headphone design language consistent over the years — smart, clean and distinctly ovular — and the HD 505 don't stray from that.

They come with a detachable 1.8m 3.5mm-ended cable so you have some freedom from your laptop, phone or other source device, as well as the customary 6.3mm adapter. A range of cables (and earpads) can easily be swapped in if, say, you want to use a balanced source or would benefit from having a cable with an in-line mic.

The HD 505 certainly look to be promising propositions, so should the likes of Grado and Beyerdynamic be worried? When it comes to Sennheiser, it would be unwise not to be.

For more information, contact Sennheiser Australia on 1800 648 628 or visit https://en-au.sennheiser.com/

A "Rolls Royce" ribbon tweeter

Swiss loudspeaker manufacturer Piega has launched its Premium Gen 2 loudspeaker range, comprising the Premium 301 Gen 2 standmounts alongside the floorstanding Premium 701 Gen 2.

The 301 Gen 2 is more compact than its predecessor but, despite having less volume, supposedly delivers the same bass response while offering "significantly improved" acoustics. Meanwhile, the 701 Gen 2 has evolved from a 2.5 to a fully fledged 3-way design here, offering a dedicated midrange driver and two bass drivers. The new models have been designed to fit into modern living spaces while delivering uncompromising performance levels.

The headline is arguably the company's specially developed 'magnetostatic' ribbon tweeter, the RM 01-24, which Piega's Head of Development, Roger Kessler, describes as the "Rolls Royce of tweeters".

'Our ribbon specialist Mario and our chief developer Roger have [brought] our ribbon, which has been tried and tested for 20 years, up to date, radically improving it,' reads Piega's literature. 'To achieve this, more than 30 prototypes were put through their paces and optimised at all levels in an enormously elaborate and complex test procedure'.

It's essentially a further development of the ribbon design found in Piega's higher-end Coax series. Handcrafted in its own factory, the high-frequency units employ dual magnets in front of and behind their foil diaphragm, with the rear and front rows of magnets strictly symmetrical in their arrangement. This precise configuration creates ideal, strictly orthogonal magnetic field lines on the aluminium ribbon, says Piega, significantly improving linearity and impulse response and reducing distortion over the brand's previous Premium models.

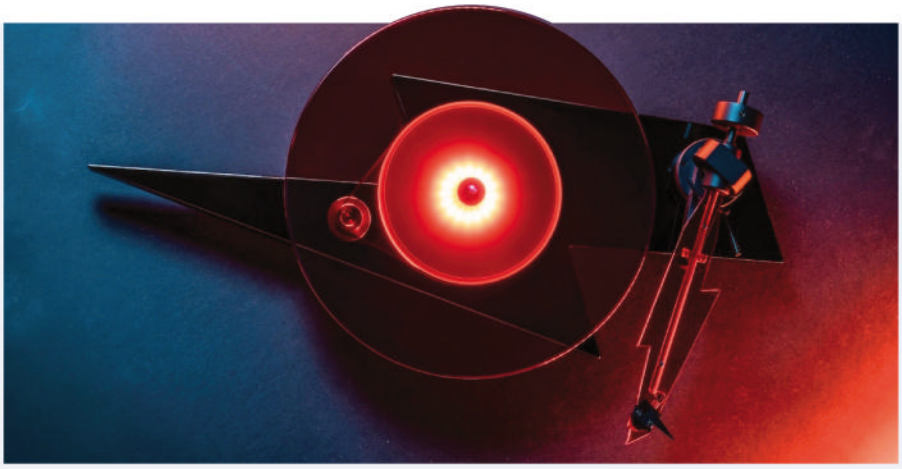
Both new models also feature new bass and midrange woofers, allowing Piega to create drivers across the board that work well together. The standmounts and floorstanders use a 14cm FSD-M (Full Symmetric Drive) mid/bass unit, while the latter also deploy twin 14cm FSD-W woofers to deliver "precise, powerful bass" seamlessly integrated with the rest of the frequency range.

The cabinets are constructed using aluminium and also feature an inner wood matrix for enhanced rigidity, as well as Piega's bespoke damping material. They aim for a level of sound "previously thought impossible with conventional aluminium enclosures".

Both speakers are available in anodised silver or black with a matte sandblasted finish, as well as in white lacquer. The Premium 301 Gen 2 and Premium 701 Gen 2 cost $5,999 and $11,999 respectively.

For more information, contact Maxmedia on infomax@maxmedia.com.au or visit www.maxmedia.com.au

Let there be vinyl!



Pro-Ject wants to spin your vinyl all night long with its new special-edition AC/DC record player. One of the most eye-catching designs in the company's Artist Collection turntable series, the rocking deck is "built for power and performance," much like the iconic group that inspired it. You might remember Pro-Ject's Pink Floyd-inspired 'Dark Side of the Moon' turntable from a couple of years ago which took inspiration from the seminal album's iconic light prism front cover, or indeed the Metallica player featuring the band's Ninja Star design by James Hetfield. Both are rather more 'cool' than the Beatles-themed Yellow Submarine spinner, which was one of Pro-Ject's first band designs back in 2018.

This new AC/DC belt-driven deck is fitted with Ortofon's acclaimed 2M red cartridge to deliver what Pro-Ject describes as "dynamic, detailed sound" straight out of the box. There's also a new 8.6-inch acrylic tonearm with spring anti-skating for precise and reliable playback with high tracking accuracy, designed to mimic the band's iconic lightning bolt logo.

The AC/DC turntable supports 33⅓ and 45RPM speeds, adjustable via its electronic speed changer. It uses a heavy and supposedly "zero-resonance" 10mm rec glass platter, with the design's high mass promising tight and accurate playback while obviously giving the turntable a distinctive aesthetic that will likely leave AC/DC addicts thunderstruck!

The plinth is made using 28mm MDF, helping to reduce unwanted vibrations and provide stability for your records. And the stainless steel axle of the acrylic sub-platter sits in a bronze bushing, illuminated by red LED lighting to give the player a striking and somewhat devilish appearance.

Also included in the package are gold-plated RCA connectors and a phono cable. The AC/DC turntable is expected to land Down Under later this year priced at $2,499.

For more information, contact Interdyn Brands on (03) 9426 3600 or visit www.interdyn.com.au

BEST BITS FROM BLIGHTY

New kit launched at the Bristol Hi-Fi Show 2025

A staple of every hi-fi fan's calendar, the Bristol Hi-Fi Show in late February is the UK's biggest and longest-running audio show (now in its 36th year) and a stage upon which many exhibiting manufacturers decide to launch brand-new products. My London-based colleagues were on the ground reporting on those global debuts from Rega, Musical Fidelity, Fyne Audio and more...

MUSICAL FIDELITY
MUSICAL FIDEL

Brio returns

Having launched its first amplifiers in 1990, the premium Elex and Elicit, Rega introduced the original Brio a year later to immediate success thanks to its musically engaging sound. The long-standing model arguably peaked with 2011's Brio-R, while the 2018-released Brio was recently discontinued and now makes way for this seventh generation.

The Brio Mk7 introduces DAC functionality to the line for the very first time in Brio history, following in the footsteps of the brand's Elicit Mk5 in 2022 and Elex Mk4 in 2023. Prior to that, Rega had exclusively championed all-analogue designs, long after rivals had fully accepted digital circuitry. The Brio becoming the third model to embrace the DAC shows not only customer demand for the functionality but also the company's satisfaction that it doesn't compromise sound quality nor increase the cost to the customer — key concerns of Rega.

Joining the Brio's single digital optical and coaxial inputs are three RCA line-level inputs, an MM phono input and a 3.5mm headphone output. The mid-range model remains a half-width design but is about an inch deeper than its acclaimed predecessor in order to accommodate the new DAC section. Rega also says the internal circuitry and signal paths have been rearranged to minimise any interference from the digital side. You get the same 50-watt per channel rating as before, too, while cosmetic tweaks follow the visual language of the rest of the company's amplifier range.

The Rega Brio Mk7 costs £799 in the UK, so we are likely looking at around $1,600 here in Australia when it arrives later this year, slotting in between the entry-level Rega io ($949) and the Elex Mk4 ($2,499).

Musical Fidelity brings back the 'B'

Musical Fidelity has teased two mid-market components that it will officially launch in winter, the B1xi integrated amplifier and — good news for persistent CD spinners — the B1xCD disc player.

The original affordable B1 amplifier was an important part of Musical Fidelity's history as it expanded the company's reach to a wider audience in the early 1990s, and this forthcoming pair of MF products is staying true to the legendary 'B' moniker by offering high performance and functionality for the more price-conscious hi-fi fan. Both the B1xi and B1xCD are expected to cost less than $1,500 each.

The amplifier is a Class A/B design packing 50 watts of power into 8 ohms (or 100W into 4), meaning it should be able to drive most speakers without feeling too much strain. It houses oversized transformers for greater dynamic handling, too. There's a decent array of connectivity options, including a phono stage alongside coaxial, optical and RCA line-level inputs, Bluetooth, HDMI ARC, a pre-amp output and a headphone jack. The inputs are selectable via an array of front-mounted buttons on either side of a large volume dial — classic Musical Fidelity design!

The B1xCD CD player, meanwhile, makes use of a true Red Book CD-DA drive, fed by a tray-loader mechanism. It boasts various analogue and digital outputs, including a headphone jack, and the welcome bonus of a large display screen. More details and firm pricing will be available closer to the launch time.

Fyne showings

Teased by Fyne Audio as a "significant audio and aesthetic upgrade" over the established outgoing F500 Series and positioned as a step above the entry-level F500E Series, the new F500S loudspeaker series promises to deliver serious sonic gains without an increase in overall price. The five-strong range comprises the F5S and F500S standmounts, the F501S and F502S floorstanders and a mountable F500S LCR unit, and should range somewhere in the region of between $1,200 and $4,500.

The F500S line once again sees the Scottish brand employ its proprietary IsoFlare driver technology wherein the mid/bass driver shares a common centre with the tweeter for improved stereo imaging, only this time the integration has been advanced.

This approach includes a neodymium high-frequency magnet with a vented rear chamber to minimise resonance, as well as a 25mm magnesium high-frequency diaphragm selected for its damping properties. Each driver's waveguide has a unique geometry to avoid internal reflections, too, helping to improve dispersion over the previous-gen F500 for enhanced stereo imaging.

Each driver's low-frequency element uses a multifibre cone, chosen for its "natural sound and predictable characteristics", and is terminated with a FyneFlute roll surround that aims to facilitate a clean transient response. The brand's BassTrax diffuser system helps to deliver bass more uniformly while helping to diminish each speaker's sensitivity to room positioning, too.

The new speakers use high-rigidity MDF cabinets, finished in either real wood veneers or piano-grade gloss paint, with each boasting bi-wirable speaker binding posts, stabilising plinths and a magnetic rear grille storage for the floorstanding models.

Experts of expression

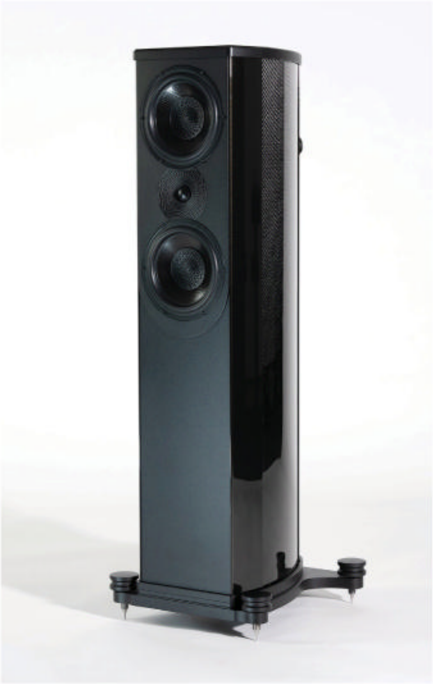
Meze Audio has launched its latest pair of planar magnetic headphones, which are yet another sight for sore eyes from the Romanian manufacturer. The Poet, conceived as a "carefully crafted audio masterpiece" and blending the company's latest technologies and materials, are open-back headphones promising high-end performance at a similarly rarefied price of $3,550.

At their core are Rinaro's MZ6 Isodynamic Hybrid Array planar magnetic drivers, developed exclusively for Meze and hand-assembled at Rinaro's facility in Ukraine. The driver design is the synthesis of that found in Meze's higher-end Elite and lower-ranging Liric models, and at its heart are neodymium magnets arranged into a 'Hybrid Array' to create a 0.3 Tesla Isodynamic magnetic field for a "uniform, powerful" distribution across the lightweight (0.06g!) semi-crystalline polymer diaphragm. Total harmonic distortion (THD) supposedly measures under 0.05% in the whole frequency range.

The Poet are constructed using an intricate steel grill housed on a magnesium chassis, complemented by a titanium alloy headband covered in suede leather.

The Poet are designed to be fully serviceable, too, with every component, including the magnetic earpads, able to be disassembled and replaced if needed. A premium hand-braided copper cable comes in the box, too.

According to Alex Grigoras, Meze Audio's Acoustic Engineer: "From the very beginning, we knew we wanted to create something unique — a more compact planar-magnetic open-back headphone that is every bit as capable as our flagship models. I believe Poet turned out to be more than just a headphone; it's a nod to a huge stepping stone in our development as a team and a testament to how far we've come".



New Horizons

Wilson Benesch kept to its emerging tradition of launching new additions to its Fibonacci Series of loudspeakers at the Bristol show, debuting the third member, the Horizon. The Sheffield-based company claims this floorstander "embodies all the qualities of the award-winning Fibonacci Series, setting a new benchmark in cutting-edge loudspeaker technology and craftsmanship within its class". The two existing Fibbonachi members — the Discovery 3Zero ($42,745) standmounts and A.C.T. 3Zero floorstanders ($71,000) — have both received critical acclaim, so expectations are naturally high for this latest model, which doesn't yet have an official price tag but is expected to sit in the middle of the family.

As with the rest of the Fibonacci Series (and in line with Wilson Benesch's cutting-edge approach across its 30 years), the Horizon uses a Monocoque enclosure similar to its bigger A.C.T. 3Zero sibling, which is made of a bio-based composite material (developed thanks to a pan-European research project funded by the EU to the tune of €7.4million to find alternative sustainable materials). This enclosure is designed to offer "unparalleled" rigidity and damping and is precision-engineered to maximise internal air volume for deep, taut bass while ensuring next-to-no noise from the cabinet itself compared with more conventional wood cabinets. As ever, these cabinets will be available in a variety of premium finishes, including real wood veneers and hand-polished pearlescent metallic paints.

As for drivers, the Horizon use proprietary Tactic 3.0 units with a Fibonacci Tweeter — also present in the A.C.T. 3Zero. Having heard those A.C.T.s, I can say with confidence that this driver pairing is very much a recipe for success.

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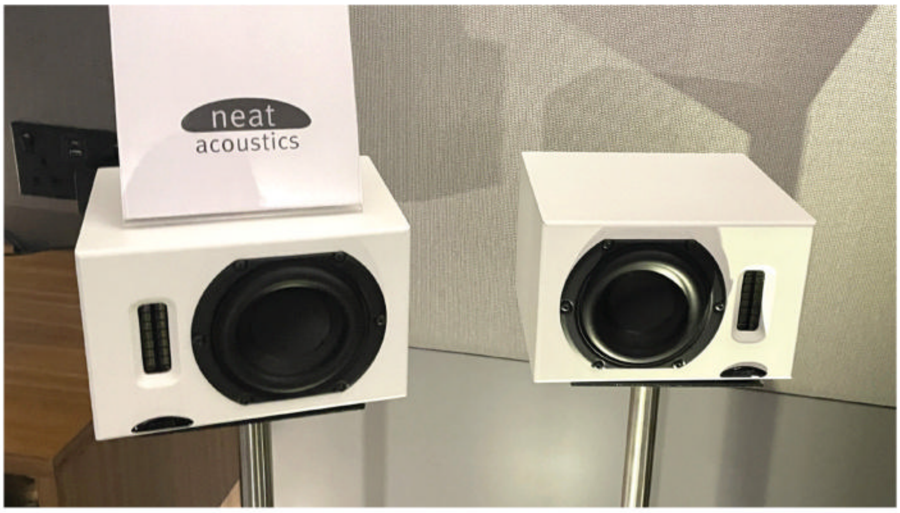

Small yet supreme

Neat Acoustics produces some of the world's most impressive compact speakers, with its *ultra*-compact Iota the miniature yet mighty marvels that first spring to mind when I think of Neat. And now we have their sequel.

The Iota II retain the same super petite cabinet size and footprint at 13cm tall, 20cm wide and 16.5cm deep, meaning you can place them in just about any space or corner, on desktops or in bookshelves — ideal options if you're short on space but not on performance expectations. In keeping with the original model, they are designed to be placed on their side (as pictured) either on stands or wall-mounted.

The Iota II feature upgraded mid/bass drivers that promise "even better bass extension and bigger scale", while sticking with their predecessors' ribbon tweeter. There is also a revised crossover, with its components chosen with care and designed to minimise any disruption to the signal path. The cabinet has gained slightly chamfered edges over the original, too.

Like their predecessor, the Iota II aim to deliver "an astonishing presentation of scale which suggests a far larger speaker". Available in satin white or black finishes, they cost £1,095 in the UK and so should, with any luck, hit Aussie shores soon for a bit under $2,500.

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Vinyl fidelity

Michell Audio — best known for its iconic Gyrodec turntables, of course — has drawn the curtain on a two-box combo designed to make the most of your high-end turntable… Gyro or otherwise! The Apollo phono stage and Muse power supply are twin compact units made of solid aluminium billet and connected by a specifically designed cable link.

The units are sold and designed to work together, with Apollo's built-in power supply circuitry supposedly working in harmony with the Muse to further refine and regulate the DC power from the dedicated supply.

The Apollo phono stage handles moving-magnet and moving-coil cartridges, offering customisable loading and gain settings. A finely tuned passive RIAA circuit is used for "preserving fidelity", while Class A circuitry has been chosen for both the preamp and subsequent amplification stages for "precise signal handling" and "clean, accurate sound".

The Muse power supply, meanwhile, is all about reducing noise — "the enemy of phono stages" — and being a source of clean, stable power. Housing the toroidal transformer naturally ensures any generated noise is kept isolated from the amplification circuits in Apollo. It also uses advanced capacitance multiplier technology and high-quality voltage regulators to reduce ripple and noise, delivering two highly filtered and regulated DC outputs.

The clam-shell design also acts as a Faraday cage, keeping unwanted electrical noise within the power supply from escaping and also shielding the phono stage's internal circuitry from being affected by external noise.

The Apollo and Muse are set to launch in the UK soon for £3,500, so we will likely be looking north of $7,000 for this deck-enhancing duo here in Australia.

FiiO flagships

FiiO has announced flagship headphones that build on the developments behind the current FT5 and FT3. For the new FT7, the company claims its patent-pending 'Gold + Silver Precious Metal Multi-Layer Coating' technology has resulted in both improved sound and durability. Inside are 106mm full-size planar magnetic drivers with a 1μm ultra-thin film diaphragm and 18 high-performance N52 neodymium magnets on either side.

They certainly look the part, too, thanks to their zebrawood grilles and earpads made of lambskin and suede. Even the cord has been given the design treatment — it's a liquid nitrogen-frozen single-crystal copper cable, cased in custom-detailed linen from the Yauli region of Peru. At 427g, they are fairly light for a flagship pair.

Pricing and availability have not been confirmed, but an "around [US]$800" figure should translate to roughly $1,300 here. FiiO is so confident in its FT7 that it claims they will take on pairs at much higher price points.

WiiM ventures beyond streaming

WiiM has been quite the disruptor in the budget hi-fi market in recent years, having gained widespread acclaim for its affordable streaming electronics (namely the Pro Plus streamer) and proving that decent entry-level streaming sound and operation are available for (relative) peanuts. But the Chinese outfit will soon launch something slightly different — the Vibelink Amp. This is the brand's first amplifier *without* any streaming smarts. Naturally it is being marketed as the "perfect complement" for its Mini, Pro Plus and Ultra streamers.

As the product has only been teased for now, there isn't much to tell, other than that it will deliver 100 watts per channel (into 8 ohms), sport a built-in DAC supporting the sample rates and bit depths you would expect, and have "premium component choices". More details should emerge next month and pricing is expected to be around $650.

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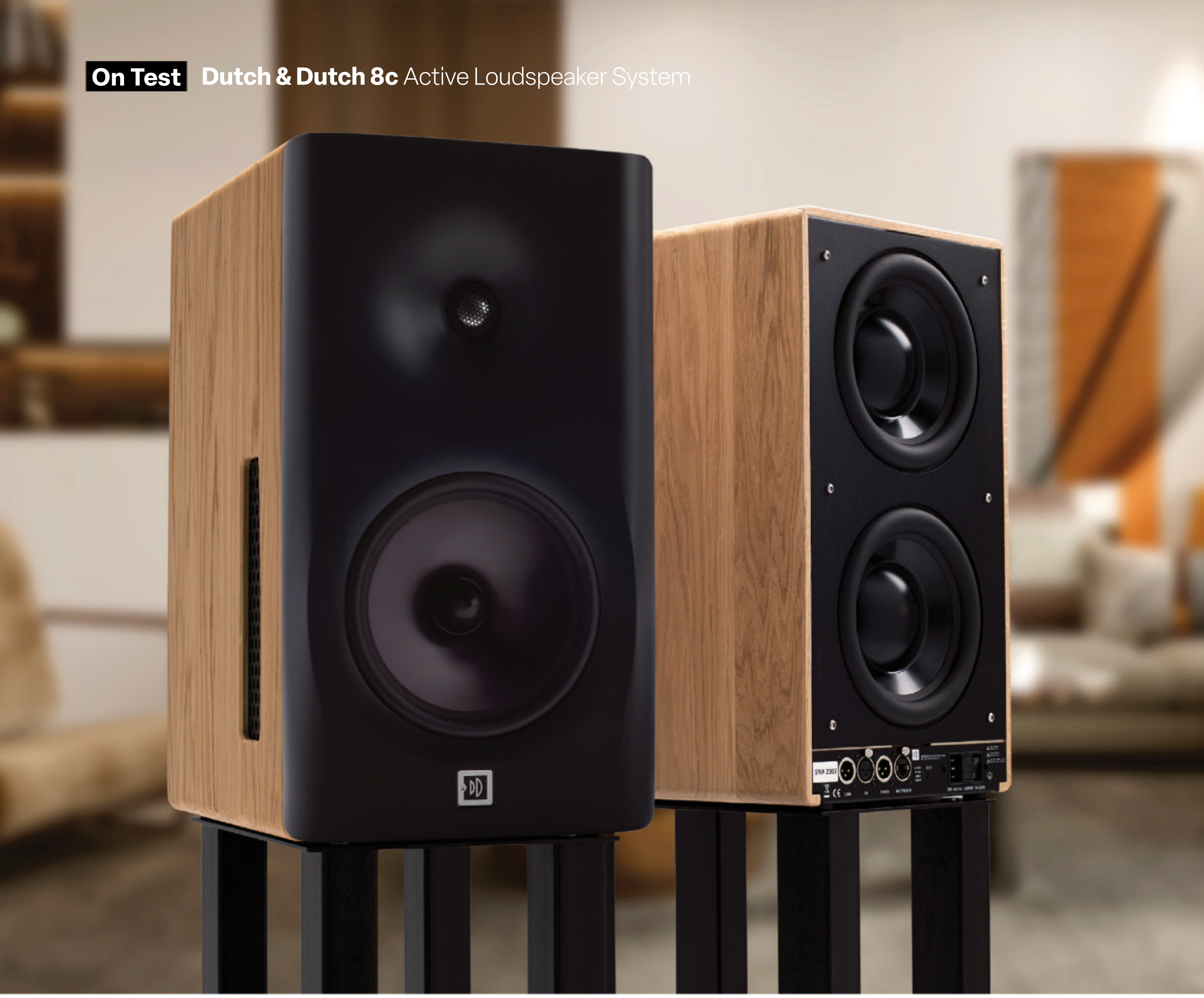

Dutch & Dutch 8c

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It would be more than fair to say that Dutch & Dutch's 8c loudspeakers have, ever since their release, been sensations the like of which the audio world has not before seen. I certainly can't remember another product that has captured the hearts, minds and ears of the hi-fi world quite so completely.

Reviewers have been raving about their sound quality, technical performance and ability to acoustically integrate into any room, not to mention that they are the world's first loudspeakers to offer commercial third-party software plug-ins, including the BACCH crosstalk cancellation (XTC) filters developed at Princeton University to allow 3D audio reproduction from a single stereo pair.

DESIGN & BUILD

The 8c are more than just 'loudspeakers', as the word 'active' in the title of this review suggests. These active standmounts have all the amplification you need built in, in the shape of three Pascal Audio S-PRO2 power-factor-corrected Class D amps with power ratings of 500 watts (bass), 250 watts (midrange) and 250 watts (treble).

The 500-watt amplifier drives a pair of Wavecor bass drivers located on the rear of the speaker cabinet, each of which has a 203mm diameter aluminium cone. One of the two 250-watt amps drives a single SEAS 203mm midrange driver on the front baffle whose cone is also made from aluminium, while the other powers the 25mm diameter SEAS aluminium/magnesium alloy dome tweeter that is recessed into the baffle and fronted by an

integrated waveguide.

The latter midrange driver has an exposed pole piece, meaning that there is no protective cap to prevent dust particles from entering the gap between it and the voice coil, so in addition to ensuring your listening room is clean, 8c owners might care to cover the speakers with a dust cloth whenever they aren't using them. That said, the risk of dust ingress is very, very low.

Crossover between the drivers is accomplished in the digital domain, using 4th-order Linkwitz-Riley linear phase filters with turnover points at 100Hz and 1.25kHz and including time alignment for the drivers. The same digital signal processor used to accomplish this frequency division and time alignment (an Analog Devices ADAU1452) also enables the creation of multiple parametric filters to adjust the 8c's frequency response to compensate for any deficiencies in your listening room's acoustics (or to simply suit your own listening preferences).

Rather cleverly, the 8c's DSP engine can be used to apply digital correction filters created by a computer-based loudspeaker measurement program called REW (Room Equalisation Wizard), which was developed by John Mulcahy (formerly the Technical Director at TAG McLaren Audio) and has become the *de facto* audio analysis software for measuring and analysing room, loudspeaker and audio device responses and correcting room acoustic problems. Although I would be the first to admit that REW is an excellent program, I would also opine that its popularity is primarily due to it being available free of charge… though Mulcahy does welcome donations via PayPal!

Look around the rear of the 8c and it isn't immediately obvious that the design can accept both analogue and digital audio signals because the same XLR input is used for both signal types. (Three Texas Instruments PCM4104s and one TI PCM4202 handle the D/A and A/D conversions respectively.) Of course, this means that if you wish to hard-wire both analogue and digital sources, you'll have to switch between them manually.

You *could* input digital audio via an Ethernet RJ45 jack, and you can also loop the input signal through to another speaker. This 'Thru' facility means you can set either speaker in the stereo pair to be nominally 'left' or 'right', plus you can also switch for mono. I found the provision of an XLR 'Sub Out' terminal intriguing, not least because one of Dutch & Dutch's advertising pitches for the speaker system is: 'There's no need for a subwoofer.'

The 8c's top and sides are made from solid oak panels and a full 19mm thick (solid except for ventilation panels for the electronics inside), while the front baffle is made from 18mm-thick birch ply fronted by a panel of injection-moulded ABS. If you aren't a fan of the oak aesthetic, other cabinet options exist, while the baffle comes in either black or white. The cabinet itself is 48.5cm tall, 27cm wide and 38cm deep. Optional custom speaker stands that elevate the 8c's tweeters to 96cm above floor level are available for $1,598 per pair.

SOFTWARE & CONTROL

You control the myriad options available with the 8c design via wi-fi, using D&D's Ascend mobile app (Android and iOS) or a web app that you can use in any modern browser. Although you need wi-fi for remote control, you don't need internet

COMPANY BACKGROUND

The name itself reveals Dutch & Dutch's background because the company is headed up by two Dutchmen, Martijn Mensink (the company's founder and often described as its 'acoustic brain') and Kevin Klein (originally a mathematical biologist who now leads the R&D team). As you might also expect, the company is headquartered in the Netherlands — more precisely, Rotterdam.

Dutch & Dutch was established in 2014 to build professional public address systems that used anti-phase sound techniques to enable localized sound control in small commercial venues. This allowed specific regions inside the venue to have completely different sound pressure levels, despite being driven by the same sound source. Mensink says the development process meant that "extensive research became our foundation, immersing our team in the intricacies of digital filters and sound dynamics, and resulted in an innovative app which granted users the unique ability to define venues in 3D, establish designated regions within it, and automatically calculate the optimal loudspeaker positions and filters to achieve the desired result".

D&D's first product was a line of PA speakers it sold under the Pro Fidelity brand name, which attracted the attention of US company 3DEA Systems, based at Cape Canaveral and headed up by Tyner Strub. The company name was an acronym for Three-Dimensional Enhanced Audio. D&D and 3DEA subsequently partnered to create a multi-speaker, object-based audio solution called 'Wavy' that gave live music performers and DJs the ability to control a sound's spatial location within a three-dimensional listening environment in real-time. Mensink says it was during the Wavy's development that the seed for the 8c concept was planted, though it only grew after D&D had worked on an earlier iteration known as the 8m (now discontinued). The brand has also discontinued its range of Pro Fidelity loudspeakers, though it does make a professional 'Studio' version of the 8c.

access *per se* because the browser control interface is hosted on the 8c speakers themselves. You do, however, need to connect them to your router via Ethernet.

Getting your head around the basic software operations of the 8c — volume, room specifications and so on — will be very straightforward, but designing your own parametric filters and/or measuring your room using the REW platform is not as easy as Dutch & Dutch makes it out to be. Luckily (or by design), you can commission the company to analyse your listening room and design and implement all the filters you need to ensure the 8c deliver the ultimate performance in your room. It's called the Remote Commissioning Service and costs, at the time of writing, around $1,000. How does this work? Dutch & Dutch sends you a microphone, after which an installation expert in the Netherlands logs in to your speakers remotely and simultaneously conducts a video session with you. You are then instructed where to place the mic for each of a number of measurements, following which the expert will create and install the necessary filters for you.

LISTENING SESSIONS

I should make it clear that one of the 8c's many strengths is that you don't need an external streaming device to listen to music. You can stream your favourite music from Roon or Spotify directly to the speakers. This essentially means that you don't need to own any other audio components *at all*, so while the 8c do represent a considerable investment, it is the only one you need to make, unless of course you want to connect a subwoofer or another source.

My first session with Dark Side of the Moon was an ear opener because the 'heartbeat' (it's not really one) in *Speak To Me* was so deep and powerful that it literally rattled the furnishings of my room. It was far louder and more impressive than I had heard from any similarly sized loudspeaker previously. One very good reason for this high level of performance here is that the DSP inside the 8c has allowed Dutch & Dutch to use the phenomenon known as 'boundary coupling' (where the amount of bass increases as the source of the bass gets closer to the rear wall) to increase low-frequency levels.

Boundary coupling happens with all loudspeakers, but DSP wizardry can make the effect far more pronounced as it can adjust the output (in terms of both volume and time delay relative to the output from the drivers on the front baffle) according to the exact physical location of the speaker in the room. Furthermore, the DSP can also boost the level of low bass to compensate for the natural roll-off inherent in the bass drivers' low-frequency output.

The stupendously good bass response was reprised across every album I played, including orchestral works, proving that the 8c are not one-trick ponies. Speaking of which, the way they delivered Paul Simon's *Train in the Distance* (both the original demo and the version that made it onto Hearts and Bones) was jaw-droppingly good. The clarity of Simon's vocals and the crispness of the sound of his guitar were second to none. This album is actually one of his best, despite being his lowest-selling! *The Late Great Johnny Ace* is the best tribute to John Lennon I've heard.

And if I thought the bass was great, the midrange proved even better. The authenticity of the sound of Glenn Gould's piano (Goldberg Variations) was such that it would have been unhesitatingly approved by Gould himself as an exact rendition of what he was hearing from the instrument as he played it.

The combination of deep bass, piano and female vocal was equally impressive when I auditioned Diana Krall's *Like Someone in Love*; the 8c's delivery was truly impeccable. The D&D speakers also delivered an exact stereo image and superb soundstage depth. The atmospherics of *Isn't It Romantic* were so palpable I couldn't help but to down the lights to listen in near-darkness.

As for the high frequencies, one of my go-to albums is Sultans of Swing: The Very Best of Dire Straits because the sound of the cymbals on *Sultans of Swing* and of the guitar on *Money for Nothing* can quickly reveal treble that is just too piercing to be realistic. Once again, however, the 8c came up trumps, delivering precise, controlled tonality and perfectly balanced highs along with a complete absence of any high-frequency distortion. The simile 'smooth as silk' has never been more appropriate!

CONCLUSION

The Dutch & Dutch 8c active speakers are so phenomenally good that I'm prepared to bet serious money that when you hear them — perhaps at the Australian Hi-Fi Show 2025 in April — you won't believe your own ears. So do you feel like placing a bet? Please do, because I would win, and those winnings would almost certainly go towards paying for the pair of 8c I auditioned!

Like those of the rest of the hi-fi world, consider my hearts, minds and ears utterly captured. ***Greg Borrowman***

SPECS & CONTACT

Type: Three-way, four-driver, standmounts with active DSP drive and a partially sealed enclosure with acoustic cardioid midrange
Drivers: 25mm alloy dome tweeter; 203mm alloy cone midrange driver; 2 x high-excursion 203mm alloy bass drivers
Crossover: 100Hz, 1.25kHz
Frequency range (anechoic): 30Hz–20kHz
Frequency range (in-room): 20Hz–20kHz
Amplifier power: 500W (LF), 250W (MF), 250W (HF)
Protection: Thermal/DC/Clipping
Finishes: White/natural, black/natural, black/brown, black/black
Dimensions (HWD): 48.5 x 27 x 38cm
Weight: 26kg (each)
Warranty: Three years

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RRP **$9,995**

Yamaha is better known for its musical instruments (pianos, flutes, guitars), its machinery (motorcycles and outboard motors) and its electronic audio components (amplifiers, AV receivers, CD players) than it is its hi-fi loudspeakers, and yet the Japanese company has actually been building loudspeakers for longer than it has been building many of these other components. You see, Yamaha's first electronic organ, the Electone D-1, released in 1959, featured its very own 'Natural Sound' loudspeakers.

These speakers were subsequently developed into high-end hi-fi speakers bearing the NS-20 and NS-30 model names, released eight years after the electric organ and often claimed to be Yamaha's first 'Natural Sound' speakers. Both were three-way designs, with the NS-30 using a bass driver measuring 890 x 630mm (!) and the NS-20 using one measuring 680 x 500mm (also !). Their very large and odd-shaped diaphragms were, rather uniquely, made from Styrofoam. The model numbers took their initial letters from the 'Natural Sound' slogan and, as you can see from the model reviewed here, the company's speakers still do. In fact, Yamaha has used these two letters to name all of its hi-fi loudspeakers since 1967 (except for one, which I'll revisit momentarily).

In the 50-odd years Yamaha has built hi-fi loudspeakers, it's scored more than its fair share of world-first innovations, many of which have since been adopted by other loudspeaker manufacturers. One of the first and most significant was the company's use of Beryllium to manufacture the midrange dome used in the Yamaha NS-1000 and NS-1000M models released in 1974. Beryllium had been proposed as an ideal cone/dome material for many years because its lightweight, high rigidity and hardness meant that its sound propagation velocity was more than twice that of the titanium/magnesium/aluminium alloys that were being used in some speaker cones and domes in the 1960s. The problem was that Beryllium was poisonous, very brittle and susceptible to corrosion — factors that made it impractical to use. Yamaha modified an electron beam vacuum deposition method that was being used to manufacture integrated circuits to instead create loudspeaker diaphragms that were 99.99% pure Beryllium. Consequently, its NS-1000 and NS-1000M speakers could benefit from having midrange drivers and tweeters with Beryllium domes.

Yamaha was also one of the first to develop a bass driver cone made exclusively from carbon fibre (previous 'carbon-fibre' cones developed by other manufacturers used carbon fibre in combination with various other materials). The company's first pure carbon fibre bass driver, a 330mm unit codenamed JA3301, was used in the very first NS-2000, released in 1982. The unique method Yamaha developed to manufacture this cone involved cutting a single carbon sheet that had its fibres aligned in one direction into eight equal parts that were then rejoined in such a way as to form a cone where the fibres were radially aligned.

The spiralling costs of carbon-fibre and Beryllium forced Yamaha (along with other manufacturers) to look for alternative materials, and to that end saw the company, in 2009, using polymer-injected Mica diaphragms (A-PMD, with the 'A' standing for Advanced) for midrange and bass drivers and aluminium dome tweeters with a unique design Yamaha called 'DC Diaphragm'. This design physically integrated the tweeter's dome with its voice coil — another first. These new technologies were first seen on the Yamaha Soavo-1 and then again on the Soavo NS-F901. (As you might have just guessed, the Soavo-1 were the Yamaha speakers without the letters 'NS' in their model name, although as their full name was actually 'Soavo-1 Natural Sound Speaker System' I suppose they did somewhat keep with tradition!)

THE EQUIPMENT

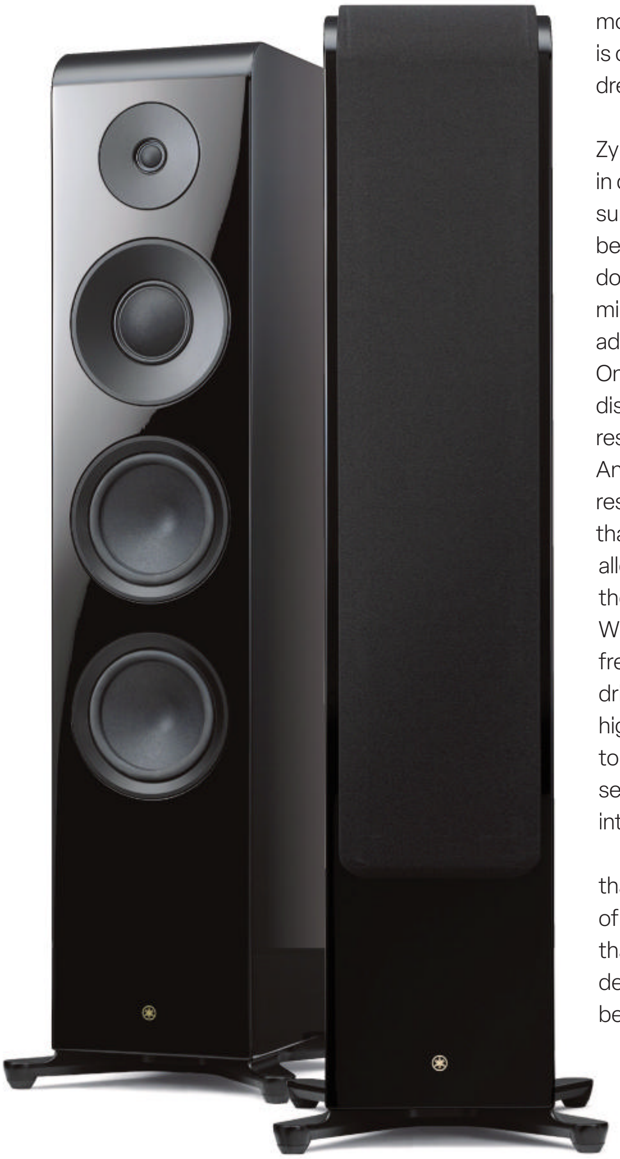
One issue many audiophiles have had with Yamaha loudspeaker designs has been their use of different materials for the different drivers (carbon fibre and Beryllium in the NS2000; A-PMD and aluminium in the Soavo series), because there's a school of thought that says that to ensure the most cohesive tonal quality across the entire audio band, it's best to use drivers with diaphragms made from the same material. With its new NS-2000A design, Yamaha seems to have taken the design playbook from this very school, as the diaphragms of all four of each speaker's drivers are made from exactly the same material: a blend of wood fibre and Zylon that the company calls a 'Harmonious Diaphragm'.

The wood used is from the same Spruce wood used to make the soundboards for Yamaha's grand pianos. The company says that using the same Spruce/Zylon material for the diaphragms across the NS-2000A's drivers "ensures accurate, faithful tonal expression throughout the entire audio spectrum, making the harmonies of the sound stand out and the music richer and more beautiful."

Zylon is an extremely strong synthetic polymer (its chemical name is 'p-phenylene-2,6-benzobisoxazole'… so you can see why everyone calls it 'Zylon') that is claimed to have an acoustic velocity comparable to that of Beryllium and a tensile strength that is 1.6 times higher than Kevlar. I'm told that the parachutes used by Elon Musk's SpaceX spacecraft have shrouds made from the material. Yamaha previously used Zylon in its NS-5000 loudspeakers, though there it vapour-coated the Zylon with a Monel alloy.

The two bass drivers in the NS-2000A are identical and have diaphragms that are almost — but not quite — cone-shaped. Yamaha specifies their diameter at 160mm, though the total moving diameter is 140mm and the Thiele/Small diameter is smaller again, at 130mm, meaning that the effective cone area (Sd) is 133cm² per cone. That means that if Yamaha had used just a single driver to deliver bass, rather than sharing the load over two drivers, it would have required an overall diameter of around 210mm.

Yamaha is using a natural rubber for the driver suspension (roll surround) which is impervious to the 'rot' that affects foam roll surrounds and is also more temperature-stable. The mounting hardware for each driver is concealed behind a black plastic dress ring.



The midrange driver is a Spruce/Zylon dome measuring 75mm in diameter and suspended by a surround that appeared to us to be made of doped fabric. Using a dome as opposed to a cone for a midrange driver comes with both advantages and disadvantages. One advantage is that the dispersion pattern more closely resembles that of a dome tweeter. Another is that the frequency response can extend higher than that of a cone midrange driver, allowing them to take some of the workload from the tweeter. With dome designs, the crossover frequency between the midrange driver and the tweeter can be higher than usual, too, moving it to a region where the ear is less sensitive to the innate distortions introduced by the crossover.

One disadvantage, however, is that the low-frequency response of a dome midrange is more limited than a cone design, meaning the designer has to put the crossover between the bass and midrange drivers a little higher than usual, closer to where the ear is most sensitive.

The NS-2000A's midrange driver has a 'resonance suppression' (R.S) chamber behind the dome that absorbs sound that might otherwise reflect back through the dome and interfere with the primary wavefront. Yamaha developed these so-called 'R.S. Chambers' when it designed the NS-5000, stating that they "eliminate the need for a large quantity of sound-absorbing material inside the enclosure that tends to smooth the frequency response of each speaker unit and might degrade minute nuances of the sound."

Back when the NS-5000 were designed, Yamaha had only patents 'pending' for these resonance suppression chambers, but it appears those patents have now been granted. According to Yamaha, those inside the NS-2000A speakers "are mounted on the back of the tweeter and midrange units in order to faithfully express even the finest nuances of musical instruments and voices. Two specially shaped tubes that cancel unwanted tube resonance generated behind the diaphragm, without relying on conventional sound-absorbing materials, reviving the natural sound and maintaining the minute musical nuances in the original source."

The dome midrange driver is surrounded by a very large, slightly concave black plastic dress ring that I assume serves not only to hide the mounting hardware but also as a horn to improve the efficiency of the dome as well as a lens to control its dispersion.

Yamaha says the NS-2000A's tweeter has a 30mm dome, though I put it at closer to 35mm. Like the midrange, it too has its own resonance suppression chamber and a plastic dress ring/lens, though its diameter is, naturally, much smaller (112mm). Although Yamaha says the same material is used across the tweeter, midrange and bass drivers, I thought they looked different; the tweeter's material seemed 'softer'. I therefore assume that Yamaha is using the same two materials but in a different ratio.

The crossover frequencies between the drivers are specified to be at 750Hz and 3.5kHz, with Yamaha saying of the circuit it uses to achieve these crossover points: "The NS-2000A adopts the highest quality parts for the crossover circuit. The MCap Supreme Classic audio capacitor made by Mundorf of Germany, renowned as the

pinnacle in audio-use capacitor, is used along with a huge woofer coil."

The NS-2000A are, like almost all Yamaha's loudspeakers (post the NS-1000/M), bass-reflex designs. The bass-reflex port is located at the rear of the cabinet, close down to the base and immediately above the two multi-way speaker terminals, which are made from pure brass. Although these terminals have the usual (+) and (–) polarity markings, the negative terminal is identified by a grey, as opposed to a more typical black, band. The positive terminal has the usual red band around it. While it might have been nice to have two sets of speaker terminals, to allow bi-wiring and/or bi-amping, I can live with the provision of just a single set.

As for the port, it appears to use the same 'twisted flare' design found on the flagship NS-5000. Yamaha says it works to "prevent the port noise inherent in the bass reflex design, and improve resolution in the low-frequency range while also enhancing signal-to-noise performance".

As you would wholly expect from a company that is renowned around the world for the quality of its pianos, Yamaha has paid the same attention to the quality of the finish on NS-2000A's cabinet as it does to the quality of the finish on its grand pianos. The gloss-black painted finish is identical! The outrigger feet at the cabinet base which improve stability are better-looking than most and come with two different sets of feet, so you can choose the foot type that best suits your floor's surface material, be it carpet, wood, ceramic, stone or some other material.

IN USE & LISTENING SESSIONS

Bass is important. It's the sole reason I prefer floorstanders over standmounts. More bass, deeper bass, *better* bass! This and other thoughts crossed my mind while listening to the NS-2000A deliver the weirdly satisfying sounds on the first track (*The Hidden Camera*) of Photek's album Modus Operandi. It's a good track for testing bass due to being spare and sparse. The double-bass and drums are cleanly recorded, while the electronic sounds that alternate between foreground and background (it is Rupert Parkes, after all!) make the sense of acoustic space all-pervasive. We found the bass reproduction to be both deep and clean, so it was a win-win for the NS-2000A on that front.

I also spent time listening to James Blake's self-titled debut album, much of it just listening over and over to *Limit to Your Love*, where the fragile vocals and simple piano chords soon give way to deep, sofa-shaking bass that rattles around at the bottom of the register and rapidly vibrates just for good measure. "Whether your kit can deliver the goods will quickly become apparent," says *What Hi-Fi?*'s Joe Cox of the track (one of his favourites to test with), and it quickly became apparent that the Yamahas could indeed deliver the goods easily and in spades.

If loudspeakers can't accurately replicate the sound of an acoustic piano, they shouldn't be on your auditioning list. Realising that not everyone is a fan of Erik Satie, I would recommend listening instead to his heir apparent, Canadian composer, pianist and singer/songwriter Jason Charles Beck, better known as Chilly Gonzales (or if you're a real fan, Gonzo), who seems to have studied showmanship under Salvador Dali. Listening to the warm, well-recorded piano sound on his sensibly (if unoriginally) named album Solo Piano had me constantly smiling, not only because the NS-2000A were delivering the piano sound so well but also because the music is just so funny and so spiritually uplifting. Listen to how sonically neutral the sound is across the 88-note span, and to how accurately the NS-2000A reproduce the very highest three of those keys.

Female vocals are also a good test for a loudspeaker's accuracy and it always seems odd to us that so many Australian audio reviewers overlook homegrown talent in favour of the usual foreign suspects. We are referring, of course, to our very own Sia Kate Isobelle Furler, an Adelaide native who has a voice (and vocal range) most singers would kill for, not to mention a talent for songwriting that has seen her work with Beyoncé, Kylie Minogue and Rihanna.

Sia must be the only musician to have complained when one of their songs (Titanium) made it into the US top-ten singles chart. "I was really upset," she said.

"Because I had just retired, I was trying to be a pop songwriter, not an artist." I listened to one of her best albums, 1000 Forms Of Fear, with its piano versions of her hits *Chandelier* and *Elastic Heart*, and recommend that you do too, preferably to hear how good the NS-2000A make her sound. Indeed, she sounded so good that I think Yamaha's engineers might have engineered a little 'magic' of their own into the frequency response to improve the sound of vocals.

I also have a soft spot for Sarah McLachlan, and her best album, Surfacing, is a regular during my reviewing sessions. I love every track — even the slow, dirge-y ones! — and the sound quality is exemplary, whether it's that of McLachlan's voice, her piano or acoustic guitar playing, Yves Desrosiers' lap steel or Jim Creeggan's double-bass. You'll hear all of these elements very clearly and with beautiful tonal accuracy if you listen through a pair of these Yamahas. The deep bass effects on *I Love You* were particularly spectacular through them, as were the ping-pong left/right channel effects on *Witness*.

I think Pierre Marchand overdid the reverb on McLachan's voice on *Angel*, but there are side benefits to the excess, which is that you can hear the way the NS-2000A deliver extreme highs and echo-ey atmospherics. And just listen to the ability of the speakers to create a full, wide, depthy soundstage for *Black & White* whilst still maintaining a tight focus on the central image. This shows that Yamaha's team keeps a very tight rein on quality control by ensuring all of the drivers are perfectly matched before they're installed in their cabinets.

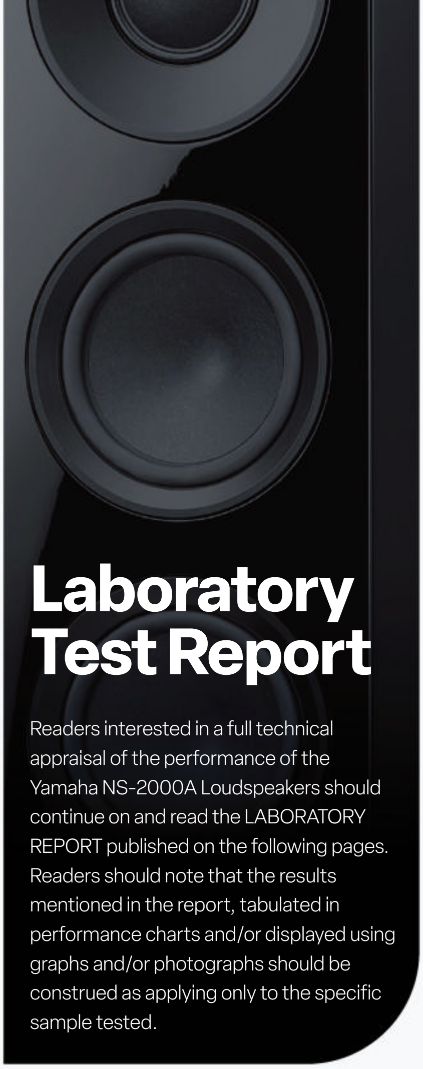
CONCLUSION

The Yamaha NS-2000A tick many boxes when it comes to performance. Let's tick them off now. Bass extension: tick. High-frequency extension: tick. Midrange smoothness: tick. Their electrical efficiency is such that they will work well with even low-powered valve amplifiers, yet they also have the power-handling capacity to deliver the kind of volume levels you may need in a large room. And we're going to guess that your other half will tick the box marked 'domestic acceptability', because they're not only a room-friendly size but also look absolutely gorgeous. ***Lesley Swan***

SPECS & CONTACT

Type: Three-way bass-reflex
Drivers: One-inch tweeter dome, 3¼-inch midrange dome; 2 x 6.5-inch bass cone
Frequency Response: 34Hz–65kHz (–10dB)
Sensitivity: 88dBSPL
Crossover Frequencies: 750Hz/3.5kHz
Nominal Impedance: 6 ohms
Minimum Impedance: 3.5 ohms
Dimensions (HWD): 113 x 33 x 45cm
Weight: 32.8kg
Warranty: Five years

Contact: Yamaha Music Australia
T: 1800 805 413



Laboratory Test Report

Readers interested in a full technical appraisal of the performance of the Yamaha NS-2000A Loudspeakers should continue on and read the LABORATORY REPORT published on the following pages. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

The in-room frequency response measured by *Newport Test Labs* for the Yamaha NS-2000A design is shown in Graph 1 and you can see that it's superbly linear and extended, such that the overall response is 24Hz to 20kHz ±3dB. If we ignore the very lowest frequencies, the response between 60Hz and 20kHz is essentially ±1.5dB — amazingly flat. This response was obtained by averaging nine measurements taken in a grid form, with the centre of the grid on-axis with the tweeter at a three-metre distance.

Graph 2 shows a frequency response where the trace below 1.5kHz is the room response from Graph 1, while the trace above is the anechoic response of the tweeter, measured on-axis with the tweeter at a distance of only one metre. The anechoic measurement enables higher measurement precision and shows a resonance in the tweeter's output at around 14.8kHz. While this resonance is of academic interest, it's at such a high frequency (beyond the hearing range of adult listeners) and affects such a narrow band that it would not be audible when listening to music.

The NS-2000A's low-frequency response is shown in Graph 3, measured using a near-field technique that is really

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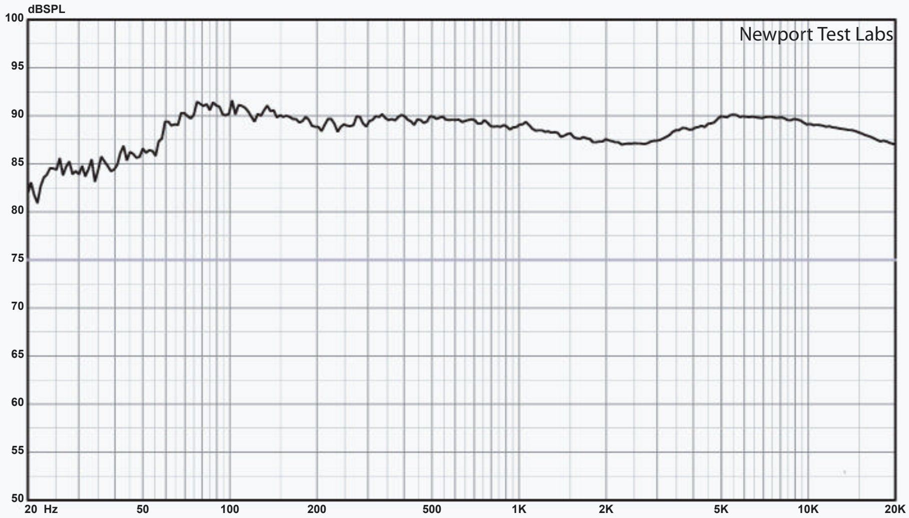


Graph 1. In-room far-field frequency response using averaged measurements at three metres

only accurate at frequencies below around 300Hz, so you can effectively disregard the level of the traces above this frequency. That said, the smoothness of those traces is informative in that it reveals how beautifully matched the two bass drivers are — the disparity between 1kHz and 1.5kHz is simply due to them being in different positions on the baffle.

There is a very slight perturbation in the response of one of the bass drivers at around 190Hz, which is echoed in the trace showing the output of the rear-firing bass-reflex port. You can see that the bass drivers' response rolls off very smoothly from around 70Hz to the 34Hz null. You can also see the port's output compensating for that null very effectively, with it having been obviously hand-tuned to peak in frequency a little lower than the null in order to improve bass extension beyond what you would expect from a strictly 'by the book' alignment.

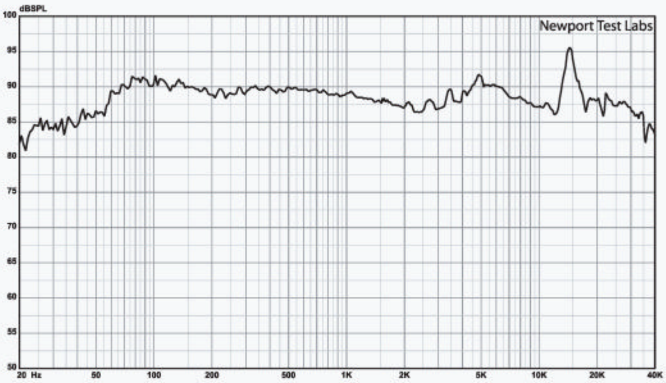
The impedance of the NS-2000A, as measured by *Newport Test Labs* and shown in Graph 4, shows why Yamaha has elected to specify a nominal impedance of six ohms for the design, because the impedance drops below that figure between 85Hz and 300Hz, and also from above 7kHz right out to beyond 40kHz. Despite this, it nonetheless presents an easy load for any competent amplifier design, even considering that impedance minimum of 3.7 ohms at 140Hz. The frequency of the minima between the two low-frequency resonance peaks is at a very low 32Hz, reinforcing the considerable bass extension delivered by this design (as evidenced by the frequency response graphs).

Graph 5 is a composite that 'marries' the various frequency response measurements made by *Newport Test Labs* while adding a measurement of the midrange driver to show where its contribution fits into the overall schema.

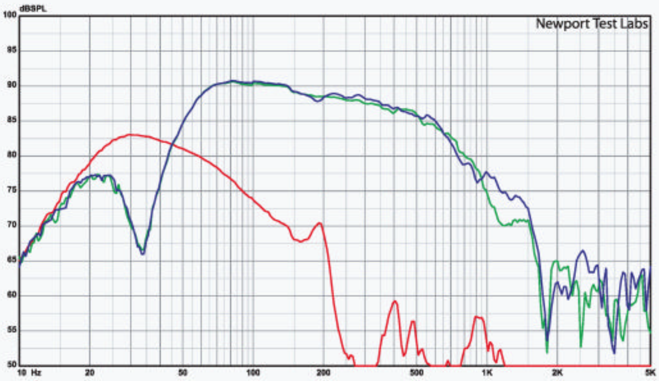
Newport Test Labs measured the sensitivity of the NS-2000A as being 87dBSPL at one metre for a 2.83Veq input. This is a mere 1dB lower than Yamaha's specification of 88dBSPL and therefore very likely due to differences in measurement techniques. The result means these Yamaha loudspeakers' efficiency is spot-on the average for floorstanding designs.

Overall, the NS-2000A loudspeakers exhibited excellent performance across all of the tests and measurements conducted on them by *Newport Test Labs*.

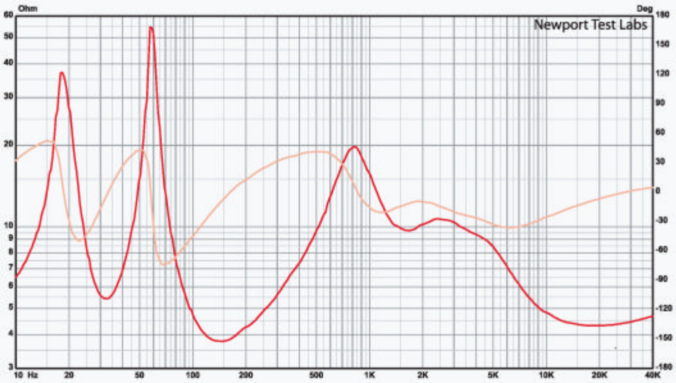
Steve Holding



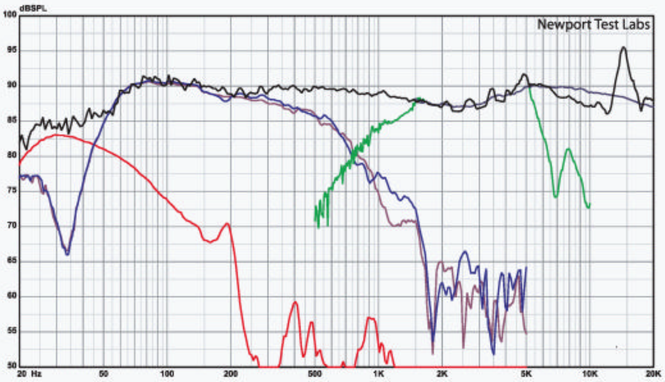
Graph 2. In-room far-field frequency response using averaged measurements at three metres



Graph 3. Near-field low-frequency responses of bass drivers (blue/green) plus port (red)



Graph 4. Impedance (red trace) and phase angle (orange trace)



Graph 5. Composite frequency responses

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Marantz Model 60n

Streaming Amplifier

- Ample streaming and physical connectivity
- Authoritative, dynamic and full-bodied presentation
- Classic yet contemporary look

- No Qobuz support (yet)

RRP **$2,500**

Marantz is seemingly on a mission to ensure hi-fi enthusiasts of all persuasions are well catered to with its eclectic catalogue, one of the most established in the consumer audio market and seemingly ever-expanding. Head to the amplifier listings on the company's website and you will count no fewer than 11 models. (In that way, the brand somewhat fits with the name of its American parent company, Masimo Consumer, considering 'massimo' (derived from Latin Maximus) means 'biggest' and 'greatest'.)

From an aesthetics point of view, not much separates them — indeed, if they were all lined up in front of you, you would be hard-pressed to spot many immediate differences. Of course, their internals tell a different story. Between them, they accommodate various budgets — the truly affordable $1,100 PM6007 at one end, the reference-level $25,000 Model 10 at the other — and span various features and use cases, with the most definitive split today separating those that integrate network streaming smarts and those that don't.

The Model 60n falls into the former category, with the 'n' indicating this is indeed a networked integrated amplifier. Despite adopting a higher model number, the Model 60n is a slightly lower-specced and more affordable version of the EISA Award-winning Model 40n, which itself packs similar amplification to the Model 50 I previously reviewed for our sister publication, *Best Buys* (Issue #1 2024, pg 28). Note the absence of an 'n' there, though — the Model 50 isn't just without network connectivity but also a DAC; it's an analogue-only model.

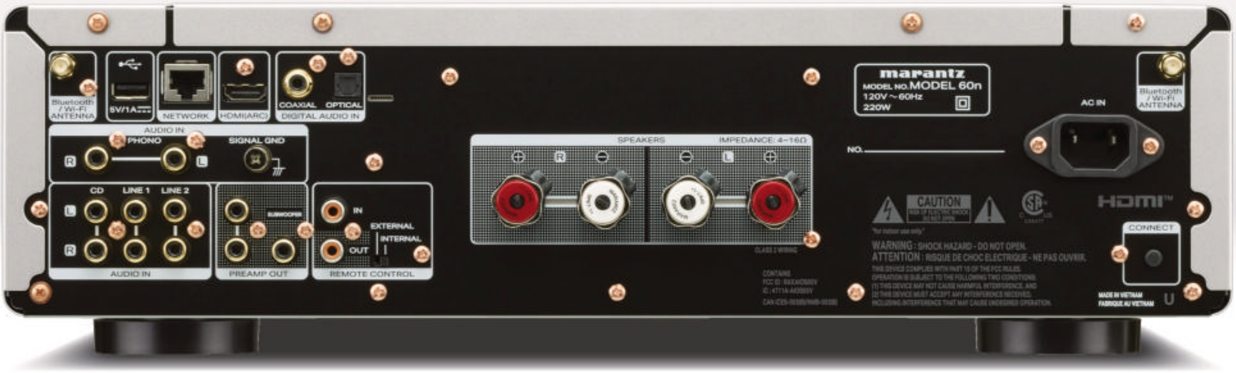
The Model 60n has a slight drop in output power compared to its 40n sibling — 60 vs 70 watts into 8 ohms and 80 vs 100 watts into 4 ohms. But they share a common goal, with Marantz claiming they are "engineered for exceptional hi-fi performance and comprehensive connectivity" — both inherently, and equally, high priorities of any streaming amplifier. Indeed, with its long-proven HDAM (Hyper Dynamic Amplifier Module) amplification technology and vast network capabilities, not to mention a selection of analogue and digital connections that cater for turntables, TVs and CD players, the Model 60n does, on paper at least, appear to be a comprehensive and talented just-add-speakers component.

Not only that but it now appears to be more accessible than ever courtesy of a $500 price reduction, available across its online distribution network at the time of writing. But with several price-comparable rivals also available in this flourishing market, not least Marantz's own Model M1, which has been getting rave reviews, does the Model 60n do enough to persuade hi-fi newbies to spend more than entry-level money? Or even to convince well-versed hobbyists that around $2,000 is all they need to spend to get two-thirds of a thoroughly modern system? Let's find out.

DESIGN & CONNECTIVITY

As I mentioned earlier, the Model 60n follows a strikingly similar design language to several other Marantz AV separates. In my opinion, that is no bad thing at all. I'm quite fond of the retro-inspired front panels with their symmetrical array of dials (volume, input, balance, bass and treble) and a matching toggle knob for Source Direct mode. Turning this on bypasses any bass, treble and balance adjustments you've made, and for most of my listening session is something I decided to leave on.

I particularly love the way light reflects off the mottled areas around the main control panel, too. Marantz updated its classic fascia a few years back, refreshing the somewhat dated look while staying true to its heritage design, and in my opinion it struck that aesthetic balance of contemporary lifestyle and traditional classic perfectly. I received the black-finished version of the Model 60n for this review, although I am probably more taken



MODEL 60n
INPUT

by the striking silver variant that adorns this issue's front cover. (That said, as I noted in my Model 50 review, I do wish Marantz would give the silver models' OLED displays a white background so as not to detract from the overall 'light' aesthetic.)

While networked streaming may be the headline feature here, and essentially means that you don't *need* to connect any other sources — or anything but a pair of speakers, really — Marantz naturally expects many owners to use the 60n as an amplification hub for other audio sources. To that end, it offers an MM phono and three line-level analogue RCA inputs, alongside one optical and coaxial digital input apiece.

The Model 60n (with whatever speakers you connect to it) can also moonlight as a sound booster for your TV thanks to the HDMI ARC connection. (If you do choose to go down this route, be sure to set your TV's audio output to '2-channel PCM'. If the Marantz machine detects a multi-channel signal, it simply won't play it.)

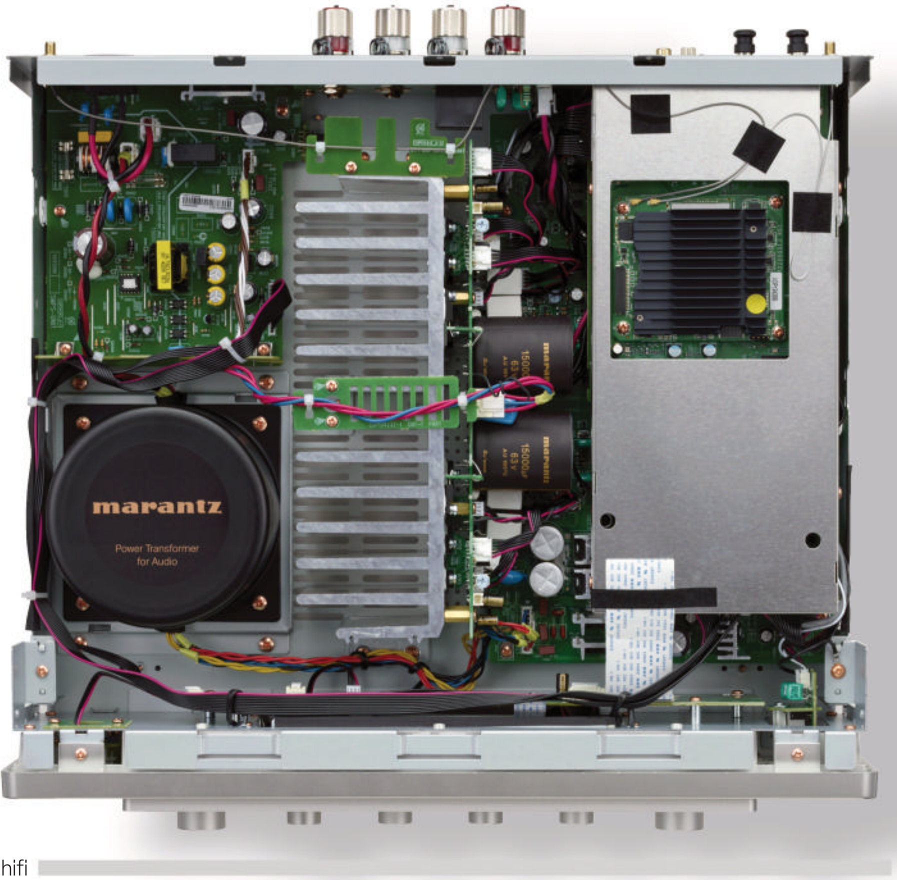
While I don't see many Model 60n owners going down this path, a preamp output is provided for increasing or upgrading power output down the line. Perhaps the more sensible inclusion for this particular machine is the subwoofer output, which will appease bass aficionados.

I find it interesting that Marantz hasn't included a USB Type-B input for a laptop or PC — that and the absence of an AM/FM radio tuner are the only mild blots on an otherwise ideal physical connectivity landscape — but there is a USB-A input for connecting a flash drive. I suppose that since this is a networked amplifier, Marantz expects owners to spend most of their listening time wire-free, and radio fans to tap into the internet radio apps accessible on HEOS.

Speaking of HEOS, the proprietary wireless streaming platform, which is baked into pretty much all Marantz and Denon streaming components, provides access to NAS devices and a selection of music service apps, including Tidal, Amazon Music Unlimited, Deezer, Soundcloud, plus internet radio apps TuneIn and iHeartRadio. Qobuz is missing (as is Google Cast), which is certainly a pity and could be a deal-breaker for loyal subscribers to the French hi-res service, although I would expect this glaring compatibility gap to be closed before long — either by in-app integration or the support of the long-rumoured but yet-unannounced Qobuz Connect feature.

The HEOS companion app is mostly a joy to use, primarily because it is incredibly easy to navigate: menus are clearly labelled and laid out, and browsing through them all is a speedy, fuss-free affair with relatively few hiccups. It isn't the most beautiful app on the planet, though, and personally I find it a little busy given that I only ever regularly access Tidal or Amazon Music Unlimited. I wouldn't call myself a radio fan in the slightest, so what *I* would consider 'extra fluff' was at times a little distracting. You may not need to use the HEOS app at all, however, if you stream mostly from Tidal, Spotify or Apple Music because the Model 60n's support for Tidal Connect, Spotify Connect and AirPlay 2 allows you to simply cast those services' catalogues to the amplifier from within their native apps. The Model 60n is Roon Ready, too, while Bluetooth (5.4) is on hand as a means to wirelessly stream offline — handy if your internet is down, say, or if you want to play your music through Bluetooth headphones.

Beneath the Model 60n's metal chassis is a Class A/B amplifier delivering, as mentioned previously, a power output that comes surprisingly close to its bigger sibling, with the latest iteration of Marantz's



HDAM circuitry, the HDAM-SA3 (the same found in the Model 30), at its core.

The digital-to-analogue conversion stage is built around an ESS Sabre DAC, with hi-res support maxing out at 24-bit/192kHz PCM for the optical, coaxial and HDMI sockets, and 32-bit/384kHz PCM and DSD11.2MHz for connected NAS and USB drives.

While owners will rely predominantly on a phone and app for system control, with those lovely front-panel dials likely being given some attention too, a remote control is pleasingly supplied with the Model 60n. It's not the most exciting tool to handle and is the same one that comes with almost every other 'Model' separate, but it gets the job done.

LISTENING SESSIONS

For this review, I connected the Model 60n to the most price-compatible kit I had at my disposal, the KEF LS50 Meta standmounts and JBL Spinner BT turntable. One feature I want to call out is the amplifier's speaker terminals, which not only provide a decently large hole through which to thread speaker cables but also feature an integrated shield to prevent any flailing wires from coming into contact with the rear of the machine and short-circuiting.

Connecting the Model 60n to my home network took mere minutes, such is the foolproof nature of HEOS operation, and I was playing tracks moments after.

To give the Marantz a decent first test, I loaded up a stream of *Like a Dog Chasing Cars* from The Dark Knight soundtrack, an orchestral piece with excellent dynamic scale and fluctuation, and the Model 60n ate it up no problem. It was a confident delivery, with plenty of headroom, space and organisation allowing it to ably track the dynamic subtleties and capture the dramatic climaxes, amounting to a truly engaging rendition.

Each drumbeat came through with heft and purpose while the frequencies above were well separated. The violins, in particular, were given the delicate caressing they require. I've had the LS50 Meta for a while now, and the Model 60n proved to be one of the best partners for them I've come across yet, its lush and authoritative character playing into the hands of the KEF's similarly tight and full-bodied one. Perhaps the most fundamental task of any music playback device is to convey the intended emotion behind the piece, and the Model 60n certainly communicated the soundtrack's immense emotional weight.

Because I love the Wonder Woman theme track so much (I owe it to my partner, who is obsessed with the DC

Connecting the Model 60n to my network took mere minutes, such is the foolproof nature of HEOS

MODEL 60n
marantz
Network Integrated Amplifier
CD
40
INPUT
SOURCE DIRECT
OFF
ON
BASS
TREBLE
BALANCE
VOLUME

superheroine), I decided to have some fun by playing *Is She With You? (Wonder Woman Theme)* — it's full title — from the Batman v Superman: Dawn of Justice soundtrack and turning up the volume as loud as my living situation would allow (around level 40 according to the OLED screen). A side note: the display is legible, but only *perfectly* from short distances. The volume level can be read clearly when you make adjustments, but when it reverts back to the usual display information (the source and volume), its small nature requires squinting at to see from some metres away.

Say what you want about the divisive *Batman v Superman* film (I quite enjoyed it personally!), the soundtrack is another Hans Zimmer masterclass, and the Wonder Woman track was delivered with authority and meaning by the Marantz — I could've listened to it on repeat all day.

Australian Hi-Fi's Writer-at-large, Greg Borrowman, suggested in this issue's review of the Modwright KWA 99 mono power amps (pg 66) that Hayley Williams' debut album was a worthy tester for female vocals, so I was keen to hear it for myself, and boy was it a cracker of a recommendation! I had already listened to the record through my everyday headphones, but what a difference something as transparent as this speaker-fronted system made. Williams' vocal came through so cleanly, clearly and playfully on my favourite track *Cinnamon* that it was quite a transformative experience and unlike anything I can recall listening to before. The track opens with a syncopated rhythm that sounded a little messy through my headphones, but the Marantz system had no such trouble making logical sense of the rhythm. When the funky drum and bass beats come into play at around the 1:30-minute mark, just try to stop your feet from tapping and your head from bobbing! It was a totally enthralling experience. Needless to say, this is an album I will return to for future testing again and again.

> Once again I listened for a dynamically present and emotive rendition — and once again I got it

The ideal Model 60n owner will want an affordable and accomplished amplifier for not only streaming but also their vinyl collection. I returned to music I was dead familiar with, spinning up *15 Steps* from Radiohead's In Rainbows record on the turntable, to once again see how the Model 60n could handle a track's off-beat drums. This is a good-sounding (for its price) turntable, albeit ultimately a modest one, and you can't realistically expect *too* much from a phono stage inside such a versatile machine at this level, so it was perhaps no surprise that the track's innovative time signature and overall presentation was *slightly* less convincing than when the amplifier was being fed the hi-res track via Tidal. Still, there was perfectly decent clarity and tonality on offer, as well as musical cohesion between all the various elements, resulting in a perfectly listenable phono performance.

I recently discovered Röyksopp's trio of Profound Mysteries albums, the third my favourite of them and its *Speed King* track a particular personal highlight. Onto the turntable platter it goes! With a steady electronic bass beat playing, the Marantz fares impressively and is capable of picking up the mysterious nature of the piece (the Norwegian duo named their albums accordingly). It's predominantly instrumental, so once again I listened for a dynamically present and emotive rendition — and once again I got it.

CONCLUSION

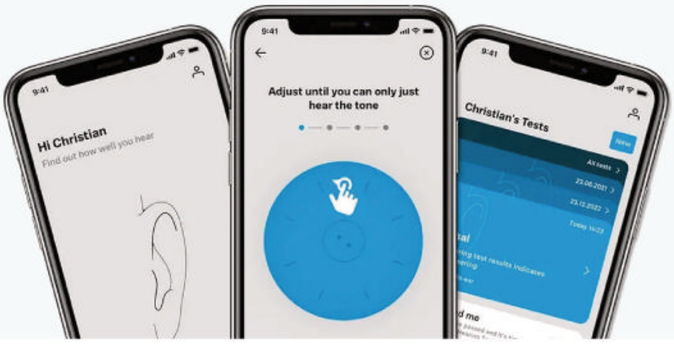
In the Model 60n, Marantz has produced a hugely likeable streaming amp that should — and deserves to — appeal to a wide audience. As a one-box, just-add-speakers solution that you can pick up for $2,000, it ticks the large majority of the expected feature and performance boxes, and *every* box within the convenience criteria. The established HEOS platform is on-point (please add Qobuz though, Marantz), as is the confident, insightful and easy-listening balance that succeeded in engrossing me both in my favourite songs and some new discoveries. ***Max Langridge***

SPECS & CONTACT

Design: Class A/B
Power output: 60W per channel (8 ohms); 80W per channel (4 ohms)
Inputs: coaxial, optical, USB-A, HDMI ARC, MM phono, 3 x line-level RCA, Ethernet
Outputs: preamp, subwoofer, headphone
Max sampling rate: 32-bit/384kHz, DSD 11.2MHz
Streaming support: Bluetooth, AirPlay 2, Roon Ready, Spotify Connect, Tidal Connect, HEOS platform
Frequency response: 5Hz-100kHz
Total harmonic distortion (THD): 0.02%
Signal-to-noise ratio (SNR): 113dB (High Level)
Dimensions (HWD): 12.9 x 44.2 x 43.1cm
Weight: 12.8kg
Warranty: Three years

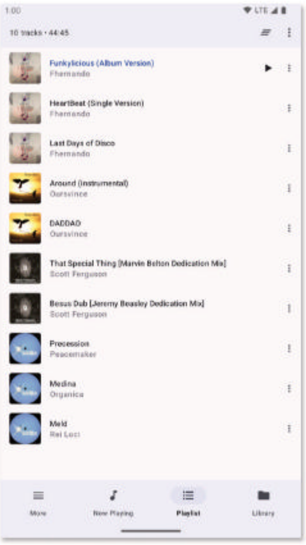
Contact: Masimo Consumer Australia
T: 1300 627466
E: info-australia@masimo.com
W: www.masimo.com

6 free apps to supercharge your hi-fi experience


9:41
Hi Christian
Find out how well you hear
Adjust until you can only just hear the tone
Christian's Tests
New

Unless you are an analogue die-hard, it's almost inevitable you'll have a number of music apps at your daily disposable, likely a streaming service, such as Tidal, or the dedicated app that accompanies your music streamer or another streaming-savvy hi-fi component. After all, phone and tablet control has become increasingly popular in recent years, to the point whereby, wrongly or rightly, many networked products nowadays don't even bundle a physical remote.

In this Apple (who else?)-coined "there's an app for that" era, it probably won't surprise you to read that all kinds of music-playing apps exist, as do other utility and audio apps that can be helpful for hi-fi scenarios. And many of them are free, such as the six I've come across over the years that sit on my Android phone's home screen.



Funkylicious (Album Version)
Fhernando

HeartBeat (Single Version)
Fhernando

Last Days of Disco
Fhernando

Around (Instrumental)
Oursvince

DADDAD
Oursvince

That Special Thing [Marvin Belton Dedication Mix]
Scott Ferguson

Besus Dub [Jeremy Beasley Dedication Mix]
Scott Ferguson

Precession
Peacemaker

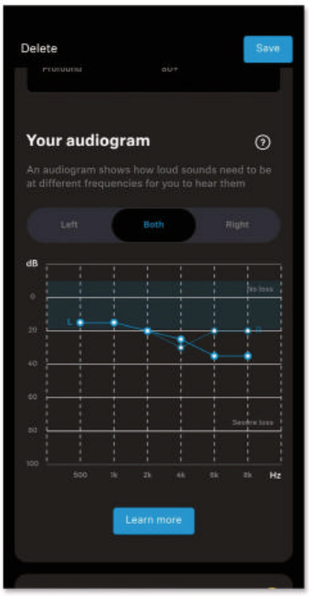
Medina
Organica

Meld
Rei Loci

BUBBLE UPNP / MCONNECT

At the heart of most networked components (those that can stream music over the internet) is a software platform and companion control app, whether it is developed by the product's brand itself (like Cambridge Audio's StreamMagic) or a third-party company (like DTS Play-Fi). The app is often a gateway to streaming services, such as Tidal and Qobuz, and allows you to access music stored on your network, perhaps on a NAS drive, via DLNA/UPnP. Not every networked component comes with an app, though — the Sonus faber Omnia wireless speaker and Q Acoustics Q Active 200 speaker system are two such examples, with some brands not having the wealth of resources required to maintain an app themselves and choosing not to pay a license fee for a third-party platform. That's where free DLNA/UPnP apps BubbleUPnP (for Android devices) and MConnect (for Apple and Android devices) come in. Others are available, but I've tried a handful both on my Android phone and the test room's iPad and these are the two I like most.

Within them you can browse your local (on-device) and networked (cloud-stored) music libraries, and simply select your UPnP-compatible streamer/speaker as the 'renderer' (output device). They allow you to cast music over Google Chromecast and access Tidal and Qobuz, too. You can create playlists as well, although don't expect overly sophisticated interfaces with grid and album artwork browsing; they are more functional than fancy.

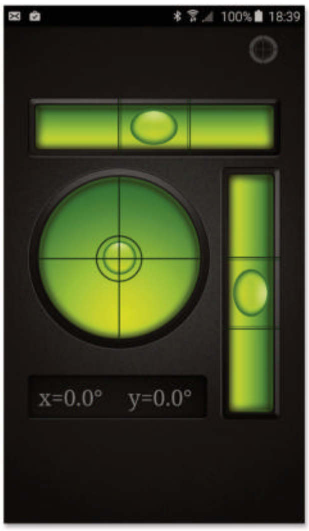


An audiogram shows how loud sounds need to be at different frequencies for you to hear them

SENNHEISER HEARING TEST

This does-what-it-says-on-the-tin app has been created by Sennheiser and tests your hearing. Anyone can perform this free test, which doesn't require you to register or sign up for anything — all you need is a pair of headphones (any will do; you specify their kind in the set-up) and a quiet environment. Following a handful of questions about your hearing and headphones, the app plays a series of test tones and you simply select when you start hearing them. It's simple and takes only a few minutes from start to finish.

The results provide you with an audiogram showing how loud sounds need to be for you to hear them, plus a written summary of what category you fall into ('Normal' to 'Severe') and what that means. I'm happy (and relieved!) to report that mine fell within the 'Normal'



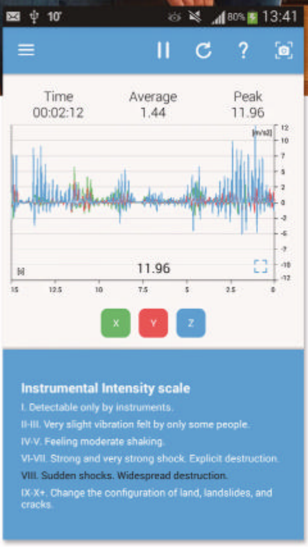
BUBBLE LEVEL

If you are setting up a turntable, it's imperative to ensure it is sitting dead-level on a surface, which may not be the case if your record player or the equipment rack it is sitting on has adjustable feet. You may have a spirit/bubble level tool to hand that will help, but if you can't remember where you put it after installing that shelf in the living room, or simply had to return it to your neighbour, a spirit level app could save you a trip to Bunnings.

Bubble Level, which currently has a 4.7/5 user review rating on the Google Play Store and Apple App Store, is one such app. Simply open it up, put your phone flat on the turntable platter (screen upward-facing) and use the three green-on-black levels to measure any tilt — naturally, you want the Y and X axis to measure 0.0 degrees. Just be aware that protruding rear-panel camera notches on the phone will affect the measuring accuracy. You have to put up with ads, but hey, it is free. Also note this will only work for rigid deck designs, not those of the sprung variety, as the phone's weight would then affect the results.

SEISMOMETER

If you're wondering how effective your system's isolation support is, are looking to compare two isolation methods, or are indeed curious to find out whether you should invest in one in the first place, a seismometer app (such as Vibration Meter for Android or Hamm Seismograph for iOS) will help detect how much vibration is being transferred from your floor to your kit. Simply place your phone or tablet on top of your speakers or turntable plinth, start recording in the app, and walk around the room or foot-tap in your listening position.



Instrumental Intensity scale

I. Detectable only by instruments.

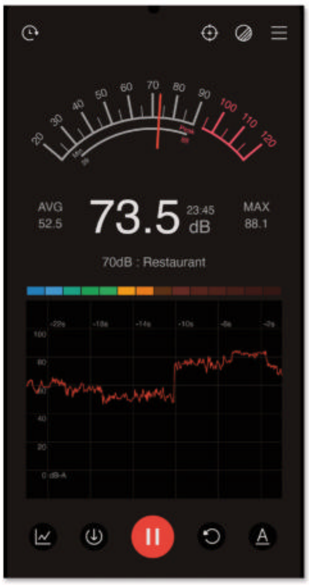
II-III. Very slight vibration felt by only some people.

IV-V. Feeling moderate shaking.

VI-VII. Strong and very strong shock. Explicit destruction.

VIII. Sudden shocks. Widespread destruction.

IX-X+. Change the configuration of land, landslides, and cracks.



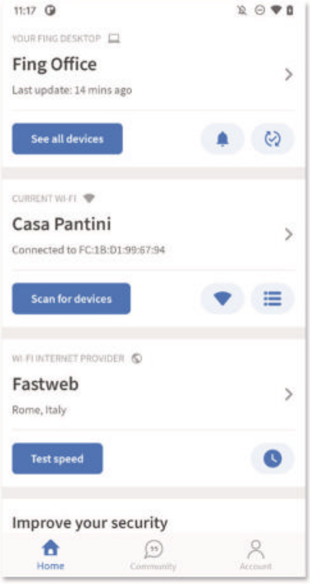
SPL METER

Apps that can record sound pressure levels, such as SPL Meter and iOS-only NIOSH Sound Level Meter, have several uses in hi-fi and home cinema applications. They can be useful when comparing speakers, as differing sensitivities may mean that you might have to turn the volume control to compensate for any level shifts due to that sensitivity difference. It's a common part of the reviewing process when performing highly critical comparisons between two products, such as the ProAc D20R vs Spendor A7 speakers and Rega Aethos vs Cyrus 40 amps, to give two fairly recent test-room examples. Another use case is when you want to adjust the speaker/subwoofer levels to achieve channel balance during a home cinema set-up.

Of course, this type of app can also be used simply to check you aren't encroaching into neighbour-bothering volume levels during listening sessions. Just bear in mind that readings are only going to be as accurate as the microphone built into your phone or tablet, so unless you are looking to do one-off or casual measurements, I would recommend investing — or borrowing — a more sophisticated microphone.

FING

A bit of a left-field inclusion here, Fing is a network scanning app that reveals every device currently using your network. It's not only good for seeing if your neighbours are piggybacking your wi-fi — and blocking them if they are! — but also allows you to identify what devices you could temporarily turn off if you are experiencing buffering problems while streaming music or video. It's a nifty tool for homes with several networked components, although the most useful features (including the two aforementioned ones) are now stuck behind a Premium tier paywall. You can also run speed tests and check how secure your network is.



11:17

YOUR FING DESKTOP

Fing Office

Last update: 14 mins ago

CURRENT WI-FI

Casa Pantini

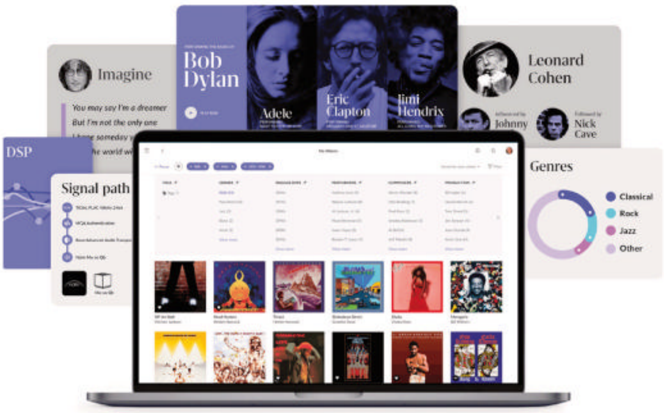
Connected to FC:18:D1:99:67:94

WI-FI INTERNET PROVIDER

Fastweb

Rome, Italy

Improve your security



AND A BONUS (COSTLY) ONE... ROON

OK, so this one is far from free, but I couldn't leave it out, and at least a free trial is available.

You will likely have heard of Roon, which has fast become one of the most popular and sophisticated music management apps and is now owned by Harman International. In a nutshell, it's a godsend for those who have multiple networked sources (and perhaps devices from various brands) in their home and are looking for one intuitive, well-organised, data-rich and beautifully laid out place from which to control, stream and browse their music.

As something to behold and use, it's a step up over most of the hi-fi brand companion apps and has extra advantages that range from performance-first software, to an ARC mobile app that lets you listen to your entire Roon library of tracks on your phone. This luxury doesn't come cheap, though — Roon is US$12.49 per month, which for many would essentially double their monthly streaming costs.

SHOW GUIDE – FULL ROOM LISTINGS INSIDE

australian hi-fi Show SYDNEY 2025

4-6 APRIL

GREAT PRIZES TO BE WON!
SEE PAGE 3

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TO YOU BY

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Scan to find
out more

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BASS WITHOUT LIMITS

Introducing **KOLA** and **ONYX**, the latest Elementi infrasonic subwoofers designed to push the limits of home cinema audio. Experience deep, visceral bass that doesn't just resonate—it engulfs you.

For those who accept nothing but the best—this is Elementi.

This is excellence.

australian hi-fi Show SYDNEY 2025

SEE US IN THE BENNELONG POINT ROOM

For more information on the full Elementi range, visit **elementiaudio.com.au**

Welcome back to Australia's premier hi-fi show! Get ready to experience world-class audio and AV kit...

And just like that, the Australian Hi-Fi Show returns for its third year, back and better than ever before! Brought to you by *Australian Hi-Fi*, *What Hi-Fi?* and *Sound+Image* magazines, Sydney's premier hi-fi show returns to the Sydney Central Hotel to give audiophiles and tech enthusiasts the opportunity to see and hear the latest and greatest audio and AV products from Australia and the rest of the world. Prepare yourselves to get the upgrade bug as you wander through four floors of live demos over one, two or, if you really want to savour it, three of the show days, room-hopping from one glorious system to another. You will experience what homegrown Aussie greats, such as Halcro, Richter and Serhan Swift, have to offer, not to mention globally renowned superstars like Naim, McIntosh and Bowers & Wilkins. High-end audio, amplifiers, headphones, streamers, turntables and everything two-channel in between will be at your listening disposal — and don't miss the chance to bask in AV reverie in the Wavetrain and Leica rooms, too.

So buy your ticket, bring your own music and find what kit is right for you!

Tickets for the Australian Hi-Fi Show 2025 are now on sale online at: www.ticketebo.com.au/future-publishing-apac/australian-hi-fi-show-2025

There are 1-, 2- and 3-day passes on offer to suit any kind of schedule: available for pensioners and students:

1 DAY PASS:	**2 DAY PASS:**	**3 DAY PASS:**
Adult - $20	Adult - $30	Adult - $40
Pensioner/Student - $15	Pensioner/Student - $20	Pensioner/Student - $30

Onkyo TX-8470 Network Stereo Receiver

VALUED AT $1,799

A streaming receiver that seamlessly blends exceptional audio fidelity with modern connectivity for hassle-free home entertainment. The TX-8470 offers fuss-free access to your favourite hi-res services and technologies, including Spotify, Tidal, Amazon Music, Deezer, AirPlay and Chromecast. It is also built for the vinyl comeback era, giving you the perfect opportunity to dust off your record collection... or start a new one! The promise: to transform your living room into a sanctuary of hi-fi sound.

Denon PerL Pro True Wireless Earbuds

VALUED AT $549

Discover uncompressed sound with both lossless and spatial audio technologies through Denon's PerL Pro wireless noise-cancelling earbuds. They allow you to create a personalised sound profile with Masimo Adaptive Acoustic Technology (AAT) for audio that is perfectly tuned to you. Add to that support for one of the highest-quality Bluetooth codecs, Qualcomm aptX Lossless, for CD-quality sound and spatial audio from Dirac Virtuo, and you have unrivalled personal listening at your fingertips.

Polk Audio Signa S2 Soundbar & Wireless Subwoofer

VALUED AT $499

This slim, low-profile soundbar delivers an incredible, room-filling home theatre experience — far beyond anything you get from your TV's small built-in speakers. A performance-tuned driver array and Dolby Digital 5.1 decoding create engaging surround sound from the compact soundbar unit and its included wireless subwoofer companion. And it's simple to set up and accommodate, too, thanks to its easy connection to your TV and a form that fits most spaces, whether that is below the TV or on a wall.

Inakustik NF-104 Micro Air RCA interconnects (1m)

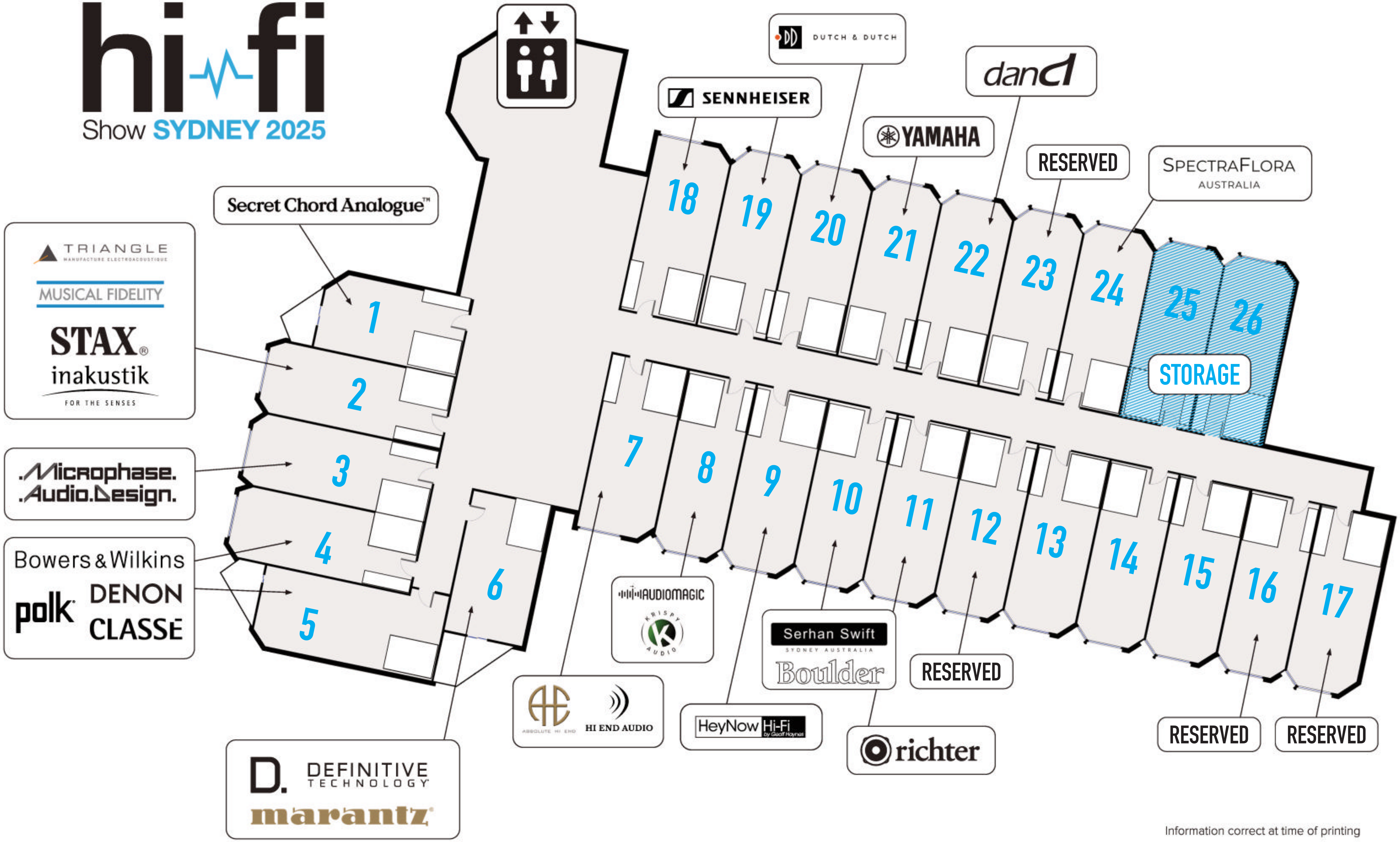
VALUED AT $510

This one-metre pair of RCA interconnects, manufactured in Inakustik's factory in Germany, brings the brand's Micro AIR technology to a more affordable price point. One of the technology's insulation elements is a complex, diamond-shaped structure, and the tiny chambers it creates increase the distance between the conductors and raise the air content of the insulation. This reduces capacitance effects and optimises the cable's transmission of the sensitive audio signals it transports.

*Terms and conditions apply – please see **www.whathifi.com/tech-events/top-prizes-to-be-won-at-the-australian-hi-fi-show-in-sydney** for full competition details

ROOM GUIDE – LEVEL 9 – CORRIDOR OF SOUND

australian
hi-fi
Show SYDNEY 2025


Secret Chord Analogue™
TRIANGLE
MUSICAL FIDELITY
STAX
inakustik
FOR THE SENSES
Microphase.
Audio.Design.
Bowers & Wilkins
polk
DENON
CLASSE
DEFINITIVE TECHNOLOGY
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STORAGE
SENNHEISER
DUTCH & DUTCH
YAMAHA
dand
RESERVED
SPECTRAFLORA AUSTRALIA
ABSOLUTE HI END
HI END AUDIO
AUDIOMAGIC
KRISPY AUDIO
HeyNow Hi-Fi
Serhan Swift
SYDNEY AUSTRALIA
Boulder
richter
RESERVED
RESERVED
RESERVED

Information correct at time of printing

SENNHEISER

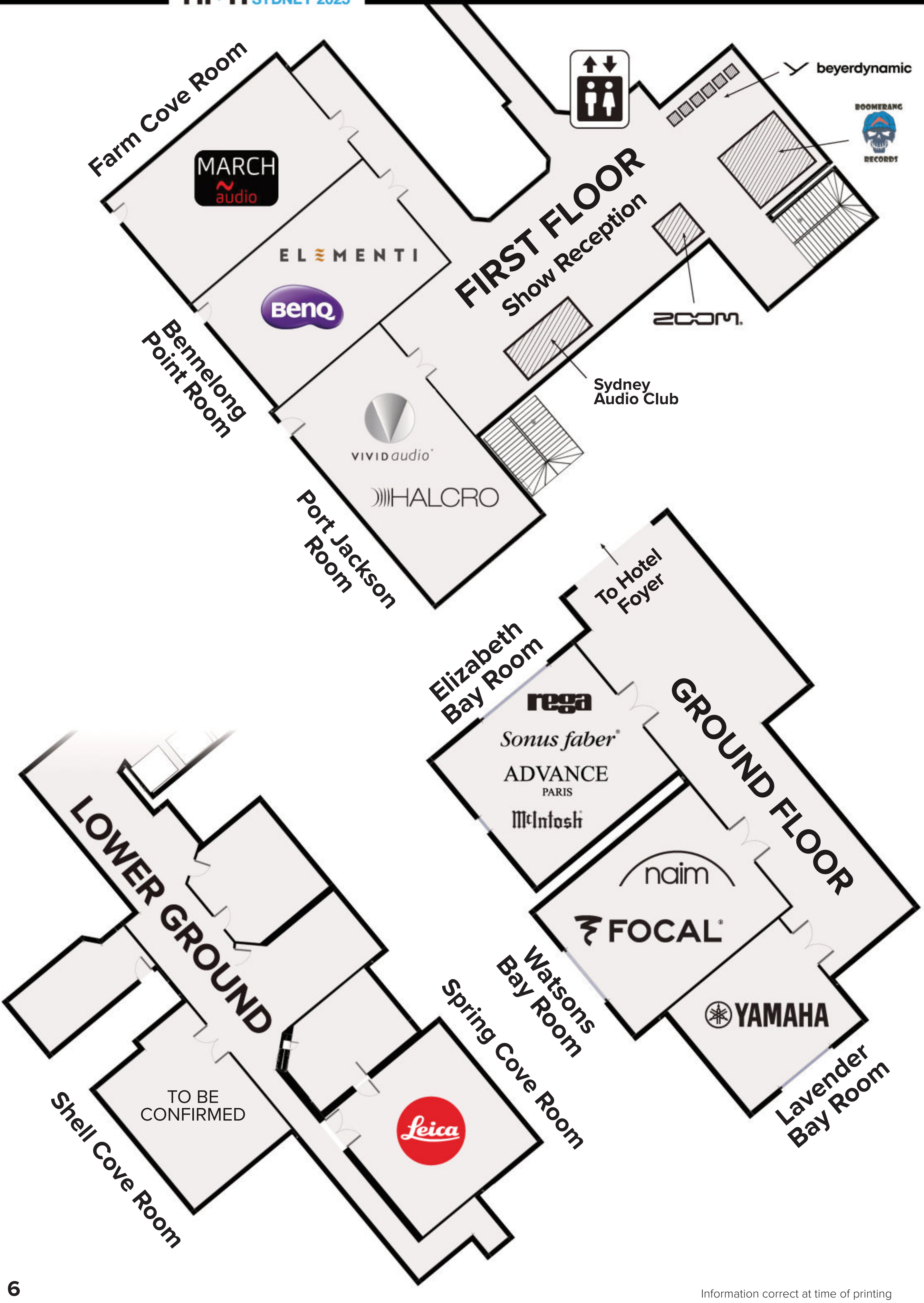
DISTRACTION OFF.
OPEN SOUND ON.

Sennheiser HD 620S

Who says closed-back headphones can’t sound that open?

Time to switch your headphones.

sennheiser-hearing.com


Farm Cove Room
MARCH audio
ELEMENTI
BenQ
Bennelong Point Room
FIRST FLOOR
Show Reception
beyerdynamic
BOOMERANG RECORDS
ZOOM
Sydney Audio Club
VIVID audio
HALCRO
Port Jackson Room
To Hotel Foyer
Elizabeth Bay Room
rega
Sonus faber
ADVANCE PARIS
McIntosh
GROUND FLOOR
naim
FOCAL
Watsons Bay Room
YAMAHA
Lavender Bay Room
LOWER GROUND
TO BE CONFIRMED
Shell Cove Room
Leica
Spring Cove Room

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SpectraFlora
AUSTRALIA

REDISCOVER MEANING IN MUSIC

SpectraFlora's Celata 88 loudspeakers are made in Victoria using responsibly sourced Australian timber. Available in custom finishes to enhance any home.

The Celata 88 was developed over four years with a focus on emotive sound.

New patent pending designs include the constant directivity Dynamic Waveguide and Celata woofer system, which contains two 8-inch, horizontally opposed, slot-loaded subwoofers.

The result is dynamic, engaging sound you can't live without.

australian hi-fi Show SYDNEY 2025 **SEE US IN ROOM 24**

Visit **www.spectraflora.com** to find out more

SPRING COVE ROOM

LOWER GROUND FLOOR

LEICA CAMERA AUSTRALIA

Spring Cove Room

It's movie time! The Leica Cine Play leverages the German company's world-leading imaging skills for this state-of-the-art, compact and versatile smart mini projector. Its innovative features, including a Full Auto Alignment system, VIDAA smart operation and a unique Leica Summicron zoom lens, ensure hassle-free setup, flexible positioning and exceptional 4K resolution. It's an excellent portable cinema for home and outdoor entertainment without permanent installations — head down to the Lower Ground via the lifts for your Leica experience!

GROUND FLOOR

SYNERGY AUDIO VISUAL

Elizabeth Bay Room

Last year's show winner for Best Sound is back in the same spot, bringing the best of the Melbourne distributor's brands, which include McIntosh, Sonus faber, Rega, REL, Ruark, Advance Paris, Chord Company, Quadraspire and more. While featuring Synergy's full demo kit list would fill a whole page here, highlights from this kit-brimming room include Audio Research's new REF 300M monoblocks, Rega's Naia turntable, Sonus faber's II Cremonese Ex3me, Aurender's N30SA streamer/server and Sugden's LA-4, PA-4 and SPA-4 amplification.

NAIM & FOCAL

Watson's Bay Room

Westan Australia and Melbourne's Premium Sound store are bringing the incredible Focal Diva Utopia speaker system to the show. These all-in-one (OK, all-in-*two*) floorstanders combine the wisdoms and technologies of both Naim and Focal together in a pair of wireless streaming active loudspeakers. The highly acclaimed Diva marry physical inputs with the full suite of network streaming smarts, and they use the latest UWB technology to achieve a wireless lossless connection between the two towers.

PORT JACKSON ROOM

Naim's Pulse Platform for active systems links this full connectivity with impressive power upgradeability capacity, easy to control with either the dedicated app, remote control or Google/Apple voice assistants. Elegant and modern, the Focal Diva represent the future of high-end sound — beautiful, yet simple.

YAMAHA MUSIC

Lavender Bay Room

Completing what is an utterly unmissable showfloor is Yamaha, which is armed with its latest loudspeakers — the NS-2000A, NS-800A and NS-600A — driven by the range's matching R-N2000A and R-N1000A streaming amplifiers. Yamaha tells us to expect a general music — not just hi-fi — room theme that features instruments as well as one of its self-playing Clavinova electronic pianos in the foyer outside. Yamaha's head-fi prowess will also be showcased in a separate room on the ninth floor.

LEVEL 1

VIVID AUDIO & HALCRO

Port Jackson Room

Avation is bringing the incredible Vivid Audio speakers to the Sydney show, allowing visitors to witness and hear Laurence Dickie's legendary designs, including the Giya G1 Spirit, the ultimate Giya, with its peerless pedigree, irreproachable technology and spectacular sound quality. And for even more reasons to head into this first room on the first floor, Avation is promising the world's best amplification support, from none other than Australia's Halcro. You'll hear the music from the top of the stairs: don't miss this Avation and Vivid Audio pairing!

MARCH AUDIO

Farm Cove Room

Western Australia's March Audio has been in the top three rooms for Best Sound two years in a row — despite its systems being a fraction of the price of many of the others. It's back for 2025 with its latest speakers, amplifiers and cables, all proudly hand-built in Albany and delivering "superb technical performance and sound

Bowers & Wilkins CLASSÉ

800 Series, 700 Series Speakers and Classé Amplifiers

SCAN TO
LEARN MORE

Cash Back Offer

Plus Gift with Purchase*

Up to $3,500 cashback

CLASSÉ
Delta STEREO
LEFT
RIGHT
Bowers & Wilkins

Offer ends 31 May 2025

+ Free Gift
valued at up to $1,798

*T&Cs apply. Selected models only. One GWP per customer, determined by order value. See in-store for details. Offer valid from March 1st to May 31st 2025.

Ⓔ sales.au@soundunited.com Ⓟ 02 9196 8990 Ⓦ bowerswilkins.com BowersWilkinsAu

ROOM 2

at modest prices". This year March Audio is moving up to one of the big ballrooms on the entry/ticketing floor, so visitors can hear what its kit can do in an even larger space!

WAVETRAIN CINEMAS with BenQ

Bennelong Point Room

After last year's incredible demonstration of home cinema image and sound quality, Wavetrain is returning to one of the floor's biggest rooms, promising to up the stakes even more with the very latest developments in Elementi digital active speakers, complemented by state-of-the-art BenQ projection. Whether you're a hi-fi or an AV fan, we are confident that the sound in this demo will blow you away!

BEYERDYNAMIC HEADPHONES

Concourse East Side

Beyerdynamic's Australian distributor, Synchronised Technology, will be at the show loaded with fine headphones from the German brand's diverse, budget-spanning catalogue. Hear the sounds and discover the reasons why professionals choose Beyerdynamic for broadcast, film and stage applications, and how those technologies transfer into stunning and often benchmark-setting consumer headphones for home and away.

BOOMERANG RECORDS

Concourse East Side

While you're soaking up the stunning sounds of the show, you will undoubtedly be inspired to take home a little black magic of your own by riffling through the racks of Boomerang Records' extensive collection. Expect quality secondhanders and audiophile Half Speed Master recordings, from ABBA to metal!

ROOM 4,5,6

LEVEL 9

SECRET CHORD ANALOGUE

Room 1

"As our name suggests, we're about analogue sound," says Secret Chord Analogue, returning to the show after delivering one of the busiest rooms last time, featuring not only "the world's finest vinyl record cleaning method", Record Restore (hearing is believing), but also tube amps by Elekit of Japan and Red Roo Kits of

Australia: power amps, preamps and phono stages for a completely analogue solution. Its special feature this year is Elekit's latest offering: the TU-8888 monoblocks, which are on show for the very first time. This analogue amplification path is perfectly served by its single-driver loudspeakers: the new SCA Wollemi, alongside the magnificent open-baffle Confluence with the SCA Seamless Sub. And for those serious about protecting their records, come and see Vinyl Storage Solutions' record covers/sleeves, now available in Oz from Secret Chord Analogue.

AUDIO MARKETING / LEN WALLIS AUDIO

Room 2

Following a fabulous system performance at last year's show with Musical Fidelity at the core, you can expect another perfectly matched and tuned system from the teams at Len Wallis Audio and Audio Marketing. There will be a particular focus on Triangle's gorgeous and versatile Capella active speaker system, as well as Musical Fidelity's all-new M6xTT turntable, which brings the high-end engineering DNA and multi-acrylic structure of the majestic M8xTT model to a more accommodating form and price point.

CAPELLA

BY TRIANGLE MANUFACTURE ELECTROACOUSTIQUE

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Space White
Astral Blue
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Designed and manufactured in France, CAPELLA seamlessly combines modern connectivity with exquisite craftsmanship.
Wireless never looked so good.

AirPlay | Arc + Optical | Chromecast | Analog/Digital Inputs | RF Remote | Bluetooth aptX

AUDIO MARKETING

MICROPHASE AUDIO DESIGN

Room 3

“Crafted in Australia with French flair, our core design forte is in small speakers crafted to sound incredibly good on their own and have a reputation for having one of the best midrange in the world,” say the folk over at M.A.D., which combine highly inert marine-grade birch plywood cabinetry with bespoke drivers mostly sourced from famous French manufacturer Audax. It was case proven at last year’s show with its latest Tower 4 design, so you can bet on more M.A.D. wonders this time round too.

MASIMO CONSUMER AUSTRALIA

Rooms 4, 5 & 6

With the promise of new and current favourite products on demo from Bowers & Wilkins, Denon, Marantz, Polk and Classé, no wonder Masimo is taking three rooms to flaunt its many hi-fi and AV sensations! Naturally, Bowers’ iconic 800 Series Signature loudspeakers are present, as is Marantz’s brand-new Model 10 amplifier, the first available component in its latest reference Model 10 Series and “the most powerful one-box amplifier Marantz has ever made”. As well as delivering top-sounding rooms, the Masimo team has the enthusiasm and expertise that allows showgoers to get their hi-fi questions answered.

AUDIO MAGIC & KRISPY AUDIO

Room 8

At last year’s Sydney show, Audio Magic and Krispy Audio delivered one of our very favourite-sounding rooms with the cunningly chamfered Kudos Audio Titan 808 speakers effortlessly rolling out the tunes under the command of Copland’s CTA407 integrated tube amplifier. Meanwhile, a VPI Scout turntable combnied with a Manley Oasis phono stage from California, while digital tunes came from the versatile Lumin P1 streamer, DAC and pre-amplifier. Glorious. What wonders are they bringing in 2025? While plans are still being decided at the time of publishing, in them so far is an Esoteric SACD player, WBT connectors, Little Fwend tonearm lifters and Vermouth Audio cables. Elite or what!

HEY NOW HI-FI

Room 9

Geoff Haynes’ hi-fi store in St Kilda, Melbourne, which has been purpose-designed as a contemporary apartment incorporating a media room and home theatre to enable realistic and comfortable demonstrations in a typical domestic setting, is relocating to the Sydney Show armed with a diverse selection of speakers, electronics and accessories that will no doubt appeal to a wide audience. Hey Now Hi-Fi stocks too many brands to list here, but wares include Fischer & Fischer loudspeakers, Aspire Audio Racks and Ypsilon amplifiers, plus kit from Sutherland, Airtight, Metronome, Dohmann, Mutech and Supertrac. Head to room nine to discover what Haynes has in store for you.

SERHAN SWIFT

Room 10

These Australian speaker gurus always deliver one of the show’s best sounds. Serhan Swift’s mµ3F floorstanders are alongside its award-winning mµ2 MkII standmounts, under the total control of the brilliant Boulder 866 integrated amplifier with DAC, providing Roon-ready streaming. With the combined wisdoms of both Brad Serhan and Morris Swift on hand, you can learn as you listen!

RICHTER

Room 11

The legendary Australian speaker marque is showing off its highly acclaimed S6plus models for those who have read the reviews and are eagerly awaiting to hear the speakers in action, or are interested in a repeat demonstration. Richter is also blessing

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See and hear for yourself in the Port Jackson Room

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show attendees with a sneak-peek special treat: a near-final prototype of the first model in its forthcoming premium Series 7 Special Edition range, the Dragon S7SE. The Dragon will be accompanied by the Wizard S7SE and Excalibur S7SE when the range goes on sale later this year, with the final production speakers featuring an upgraded cabinet design and some very minor crossover tweaks over the pair you can see in room 11.

SENNHEISER

Room 18

Sennheiser's headphone haven is giving visitors the opportunity to temporarily isolate themselves from the buzz of floor nine and bask in the musical playback of one (or more!) of the reputable brand's many over-ear and in-ear treasures. The 500, 600 and 800 Series home headphones reliably deliver competitive sound and benchmark value, and we for one will be lining up to hopefully hear its latest HD 505 and HD 620S models.

MAGENTA AUDIO

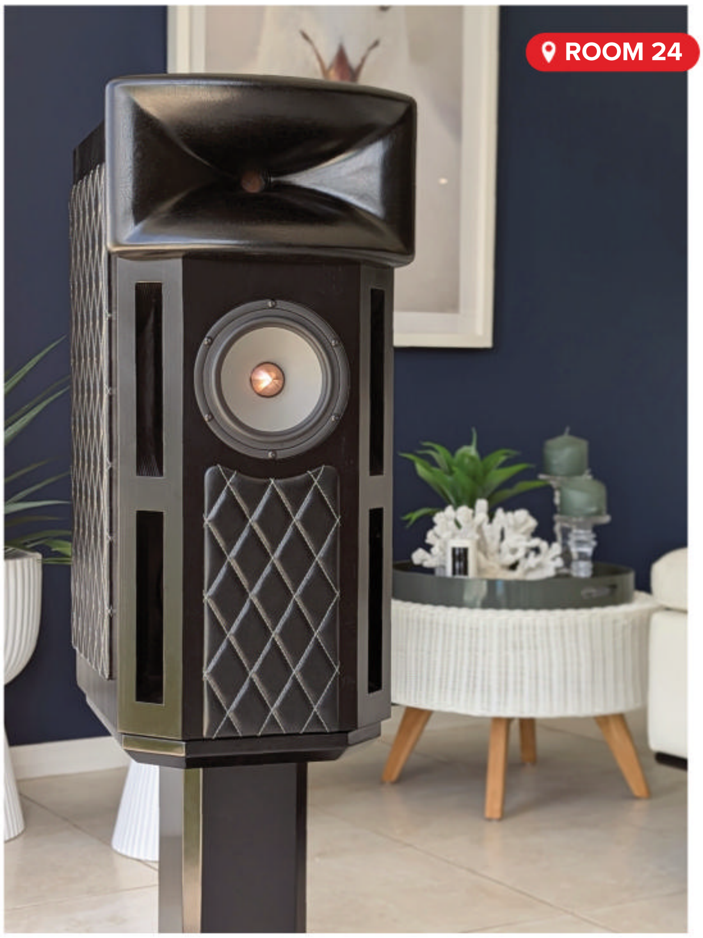
Room 20

Dutch & Dutch is behind the groundbreaking 8c active speakers we have just called "phenomenally good", and which have had reviewers everywhere raving, so it's no surprise that the speaker system is at the centre of Magenta Audio's demo this year. It is just one example of the many jewels in the distributor's discerning crown, though, with the likes of Lindemann, Halcro, PS Audio, Engstrom Sound and Moonriver Audio under its umbrella, plus US manufacturer Bricasti, who Magenta took on last year.

DANA ELECTRO ACOUSTICS

Room 22

New South Wales' Dana Electro Acoustics specialises in active loudspeakers, vibration isolation supports, interconnect cables and more. Its [act:eve] range of active speakers have the quirky model names to match — such as [zen:ter]! — and comprise pairs that use vacuum tube amplifiers for the main driver while others use only solid-state devices. Its [iso:form] isolation platform comes in two forms (carbon fibre and wood composite) and three sizes, while its OPEN interconnects, designed for reference stereo and AV setups, marry pure silver conductance with Teflon insulation.



YAMAHA MUSIC

Room 21

We're delighted that Yamaha is taking an additional room at the show specifically to highlight its headphone expertise. This could well involve its high-end YH-5000SE headphones and matching HA-L7A flagship headphone amp, but word on the street is that there might be a preview of some new additions to the range in the Yamaha Head-Fi room too. There's only one way to find out...

SPECTRAFLORA AUSTRALIA

Room 24

SpectraFlora's loudspeakers are handcrafted in Victoria using sustainably sourced Australian timber, and precision design technologies that promise a uniquely open, transparent sound. The latest, Celata 88, have cabinets of hoop pine plywood, a native Australian species sustainably grown in Queensland plantations, while the horns — which combine the powerful dynamics of a horn with the even horizontal dispersion and transparency of a waveguide — are available in either hoop pine plywood or solid timber which is either plantation-grown or salvaged. These new and eye-catching loudspeakers are not to be missed.

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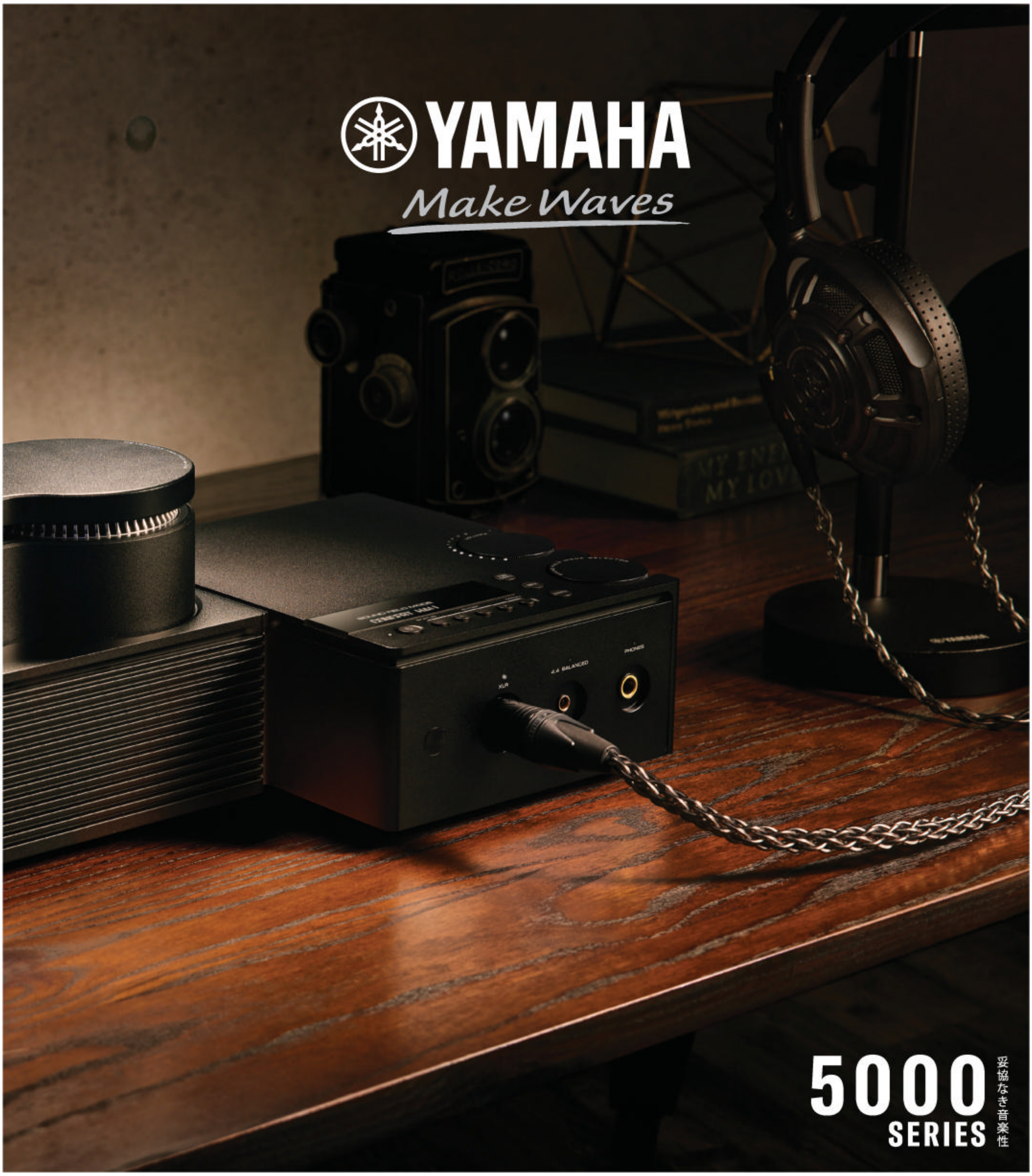
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Headphone experts explain how active noise cancellation can hurt sound quality

Debating whether active noise cancelling (ANC) technology or wireless Bluetooth technology has been the most practical headphone development of the 21st century is a bit like debating whether the macaroni or the cheese is the biggest contributor to a mac 'n' cheese. Both play a huge role in making music listening convenient and, most crucially, enjoyable on the move; they go hand in hand like smitten newlyweds walking down the aisle (except the majority of those featured on "MAFs").

While Bluetooth is universal in wireless headphones and earbuds today — no more radio frequency (RF) transmission, thank you very much — ANC has only in recent years rolled out to models beyond those of premium asking prices and flagship status. Now, you can get decent noise-blocking ability from well-performing in-ears and over-ears below $200 (and all the way up to ten times that).

With modern life being more frenetic — and noisier — than ever, ANC technology has never been so valuable. It's a blessing when it comes to isolating you and your music from the loud, distracting world of roadworks, crying babies and transport engines around you, not least as, in an increasing number of cases, it can now automatically adapt in intensity based on your surroundings. Indeed, both the science and implementation have come a long way since active noise-cancelling was pioneered by Bose and Sennheiser decades ago. Believe it or not, the technology has been around since the 1970s and was first implemented in aviation headsets made for pilots.

Today, processing is often so fast that sudden loud noises can be calmed, while, on the flip side, ANC systems can temporarily amplify surrounding noise so that you can hear, say, train announcements without taking the headphones off. As Beyerdynamic's Gunter Weidemann points out, it's now even possible to calculate ANC for the left and right earcups/buds independently and adjust them automatically — handy if, say, you are in the window seat of a plane.

But it's taken years of hardware and software development to get here, and its effectiveness still varies wildly from pair to pair, at the mercy of how well it has been implemented. So how does it all work exactly? And why can it sometimes screw

How does ANC work?

Picture the scene: Monday morning, at the table otherwise known as your 'home office'. Your other half's got a 10am Zoom meeting and a virtual yoga class at 11am. The chap next door has been fitting a new kitchen for, oh, around two weeks now. Currently a child upstairs is watching *Frozen II* on Disney Plus for the eighth time since Friday afternoon. Enter noise-cancelling headphones — your silence, your saviour. But how does this ingenuity work?

The short answer: two or more tiny microphones on the outer housing of the headphones' earcups "listen" to the noise around you and quickly create a mirror image of the compression and rarefaction of the air (i.e. external sound). Too much too soon? Let's expand. Disregard the sound coming from your headphones and going into your ears for a moment and focus on the sounds outside them — and all around you.

You can think of the sound waves around us like peaks and troughs, or ripples in a pond. Aeroplane engine noise is an ideal example since the thrum you hear in the cabin is typically a soundwave of constant amplitude — the height of the peaks and the depths of the troughs are continuous.

If you produce another sound wave with the same amplitude but opposite phase — with a peak where the engine sound wave has a trough, and *vice versa* — you get something called an antiphase. Added together, the two sounds cancel each other out. The result: silence. And you're listening to your music in peace. This is visually represented in the graphic at the top of this article: the squiggly blue line is the external noise sound wave, the squiggly red line is the antiphase sound wave created by the headphones, and the horizontal blue line is silence (or close to it).

So, adding two things together to get nothing? Yes. Think back to your school days (if you dare): adding a minus number to a number is the same as subtracting. So, 11 + -11 = 0. Understood at the back? Good work. Back to your active noise-cancelling headphones and your upcoming train journey. Toggle ANC on and the tiny microphones on your headphones pick up that irksome engine thrum. This is then quickly measured by the headphones' internal electronics to produce an opposite sound, which is fed into your ears. If the tech does a good job, all you'll hear is the chug of the train fading into nothingness.

Try it out and you'll find that there is a second or so between switching ANC on and hearing it kick in. That delay is the time it takes for your headphones to listen to the noise that needs cancelling, process it and produce the appropriate 'anti-wave'.

More advanced (read: more expensive) noise-cancelling headphones actually use a larger number of these small microphones to pick up external sounds, in a bid to more accurately determine which sounds need to be cancelled and which you might want to still hear.

Noise cancelling at this level can sometimes be supplied with its own app. Bowers & Wilkins' Px8, for example, do a top job of customising the external sounds you want to hear. This particular model boasts 'office', 'flight' and 'city' environment filters, as well as a 'voice pass-through' (Transparency mode) slider to customise how much you want to hear the person sitting next to you, from 'off' (not at all, thanks) to 'amplified'. The veteran Bose Noise Cancelling Headphones 700 have 11 levels of noise-cancelling intensity to suit your needs, while their successors, the QuietComfort Ultra Headphones, let you select from modes (of ANC combined with sound settings) as well as create your own custom filter. It's all done with the same antiphase calibration technology, and it's all pretty impressive.

HOW ABOUT ADAPTIVE ANC?

As alluded to already, active noise cancellation doesn't always remain static. Increasingly, modern headphones come with various ANC modes, one of the most popular of which is 'adaptive ANC'. As the name suggests, this mode automatically adjusts the noise-cancelling effect depending on your current environment.

In a busy coffee shop, for example, the ANC will increase in order to block out unwanted background noise. Step out into a quiet street, and the ANC will reduce. All this happens without you doing a thing — you just pop on the headphones and go about your day. They work to adjust ANC levels organically so that you don't audibly notice (and get distracted by) big changes.

Different brands call this function by different names, and they all work slightly differently. The Bose QuietComfort Ultra Earbuds play a short, sweeping tone every time you put them in your ears — when this happens, a mic inside each earbud measures your ear canal's acoustic response. The audio and ANC performance are then altered accordingly and then continuously tweaked in the background as the headphones monitor what's happening around you.

When in Transparency mode (which, as a reminder, amplifies background sound so that you can, say, hear a train announcement without having to remove the headphones), they also activate ActiveSense technology. This lets you hear your surrounding voices and whatnot but still blocks really loud background sounds that could be disruptive.

Apple's AirPods Pro 2 do something similar but Apple calls it 'Adaptive Transparency' — it's effectively adaptive ANC during Transparency mode (which is what Bose calls Aware mode – confusing, right?). Their ANC is also adaptive, constantly listening out for noises to silence — the algorithm adapts the sound signal 200 times every second in order to react quickly (the Beats Fit Pro also have this feature). However, they don't have different ANC modes, whereas the aforementioned Bose pair lets you designate different levels of noise cancelling for different scenarios.

up the sound? I asked the people who know ANC best: the engineering and product teams behind class-leading headphones from Bose, Beyerdynamic, Bowers & Wilkins, JBL, Sennheiser and Technics. Here's what they said.

PASSIVE DESIGN ISOLATION

ANC is a technology — a way to cleverly cancel out external noise through the use of hardware computer chips and digital processing and algorithms. It's an electrical feature that requires power to work, and when you're using it, you'll soon notice that your wireless headphones' battery is draining at a faster rate.

But the primary consideration lies in the physical build and design of the headphones themselves and the noise isolation they can offer. Now we're talking about a physical thing; how headphones block out external sounds — and reduce the amount of sound leaking into your ears — without the need for power.

Mikael Herje of Harman International (JBL, Mark Levinson etc) says it's important to create what he calls "passive cancellation" — how decisions over materials, shapes, ergonomics and seal (earbuds) or clamping force (headphones) can combine to physically block noise in the first place. The combination of these aspects has "a big impact on the total noise cancellation effect (TNC)," he says. If you've ever experienced a lack of bass or sound leaking in while wearing earbuds, or have gaps between your head and earpads while wearing over-ears, it's likely down to imperfect fit.

Bowers & Wilkins' Steve Hoyle agrees. "The ergonomic design of any headphone is very important, ensuring that the fit and seal are consistent for all users," he says. "The better the headphone fits a wider range of users, the greater the passive isolation, which in turn reduces the amount of work required for the ANC."

> "Its effectiveness depends heavily on the quality of the drivers, mics and the overall acoustic design"

ULTIMATE ANC SYSTEM

So you have a good fit and, to borrow Herje's phrase, a "solid passive noise cancellation baseline". Now to the 'active' part of the sound-blocking design…

You can read all about how active noise-cancelling technology works on the left-hand page, but in a nutshell, microphones located on the earcups/buds measure surrounding noise and create a mirror image of the compression and rarefaction of the air (opposite in phase and referred to as "anti-noise") to effectively cancel it out. And there are two methods of doing this: feedback ANC and feed-forward ANC.

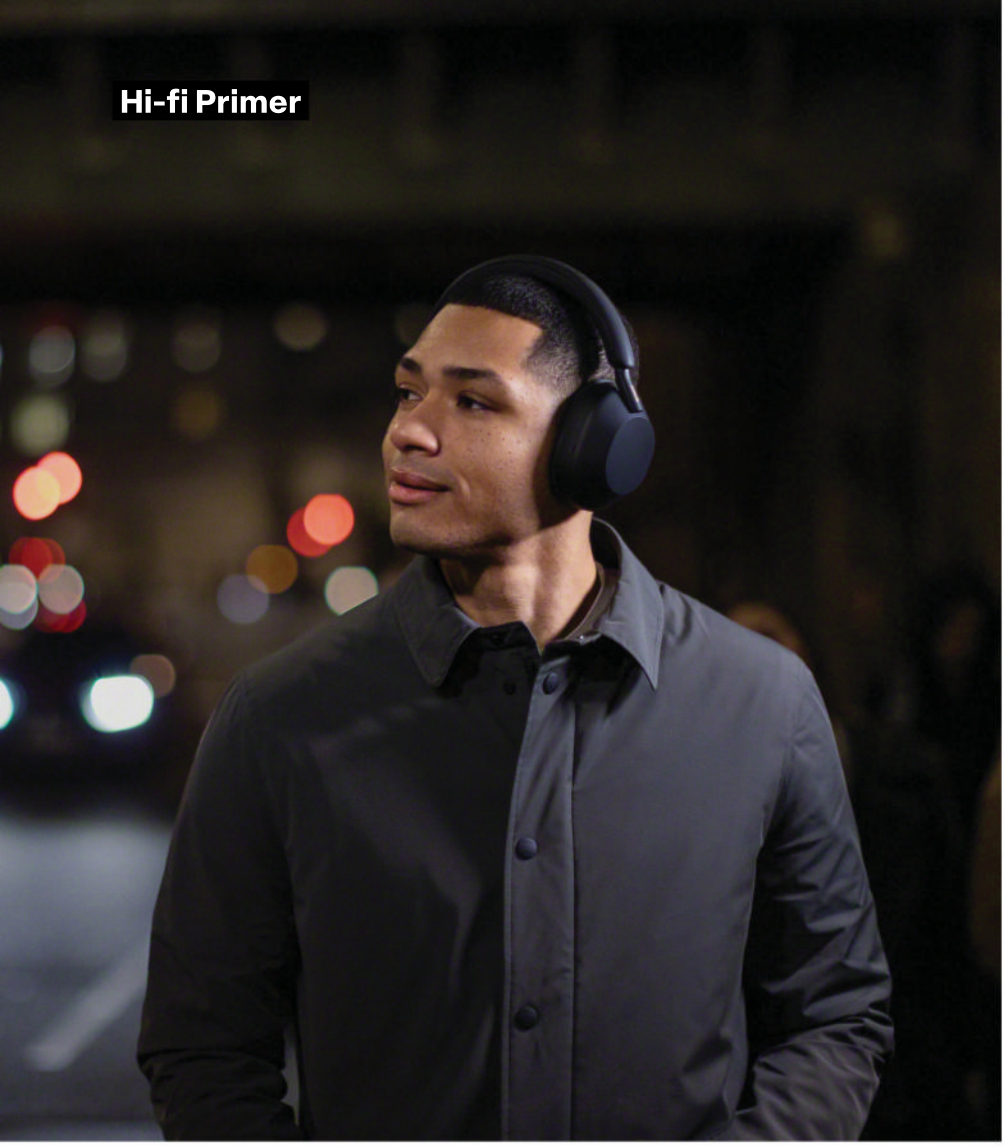
With feedback ANC, the microphones are located within the earcup/bud, ideally placed between the driver and the wearer's ear, meaning that the noise picked up more accurately reflects what is heard by the wearer, regardless of the fit or direction of the noise. It can basically adapt and self-correct what gets into the earcup/bud, although it is less effective at suppressing higher frequencies.

Feed-forward ANC, meanwhile, is the simpler method. The mics are located on the outside, so are more sensitive to noise detection in the higher-frequency band and there is more time to react and generate the inverted, anti-noise signal. That said, feed-forward is also subject to noise directivity and fit, and can also struggle to handle wind noise.

The ultimate implementation is, as the headphones brands agree on, a hybrid design, a more complex and expensive solution. "It combines the strengths of both technologies and can compensate for some of the weaknesses of the two," says Christian Ern of Sennheiser, "and the gain in ANC performance is typically worth the investment."

Again, in order to best implement these active designs, engineers must think outside of the processing box, too. The best implementations must "seamlessly integrate hardware design with advanced digital signal processing [DSP]," according to Bose's Mark Bergeron. He gives one example: "Precise acoustic cavity and porting designs help regulate airflow and pressure variations across key frequency ranges, helping to make the system robust, consistent, and well-behaved during transient events or environments."

"Its effectiveness depends heavily on the quality of the drivers, microphones, and the overall acoustic design," adds the Technics team. "If these elements are



not up to standard, the performance of ANC cannot be improved, no matter how advanced the algorithms are.”

Bose, Beyerdynamic and Harman International all note the importance of microphone positioning, too. “Incorrect positioning leads to weak noise cancellation, feedback loops or distortion,” says Gunter Weidemann at Beyerdynamic. “If there’s any delay in processing [the inverted signal], the timing can be off, making the cancellation less effective.”

SONIC CONSISTENCY IS KEY

In most pairs I’ve come across over the years, I’ve noticed some degradation in sound quality when ANC is activated, although I should say that the consistency with it on and off is considerably improving. Indeed, as Herje says, “The perfect outcome is that the sound quality stays the same or does not change at all.”

> “… too much or too little cancellation in a specific frequency range can result in unnatural listening”

But there are inherent factors of active noise-cancelling systems to overcome in order to achieve this, not least as feedback ANC techniques can inherently degrade the music playback signal. Technics, Bowers & Wilkins and Sennheiser note how compensation techniques in DSP can be introduced to combat this. “Compensation is typically applied by pre-boosting the music signal to allow for any cancellation from the feedback path,” says B&W’s Hoyle, “however this can severely limit the dynamic range available.” Sennheiser’s Ern notes how limiting the frequency range or amplitude of active noise compensation can help overcome compensation shortcomings, but there’s no denying that this sounds like a tricky business. No wonder I often hear ANC systems at work!

As with a lot of things in this world, the key is balance. Ern notes the importance of striking a balance in ANC intensity: “On one hand, the residual noise reduces the perceived sound quality for the user. On the other hand, the stronger you drive ANC, the more likely it is that a user may experience sound deterioration in some cases, like extreme noises or leaks in the sealing between the headphone and ear.”

Similarly, Bose’s Bergeron says that balance pertains to targeted frequencies too: “Applying too much or too little cancellation in a specific frequency range can result in an unnatural listening experience.” He also mentions that the ANC system must coordinate with the audio equalisation depending on the use case, so that it works well for not only music but also podcasts and phone calls.

EVOLUTIONARY ROAD AHEAD

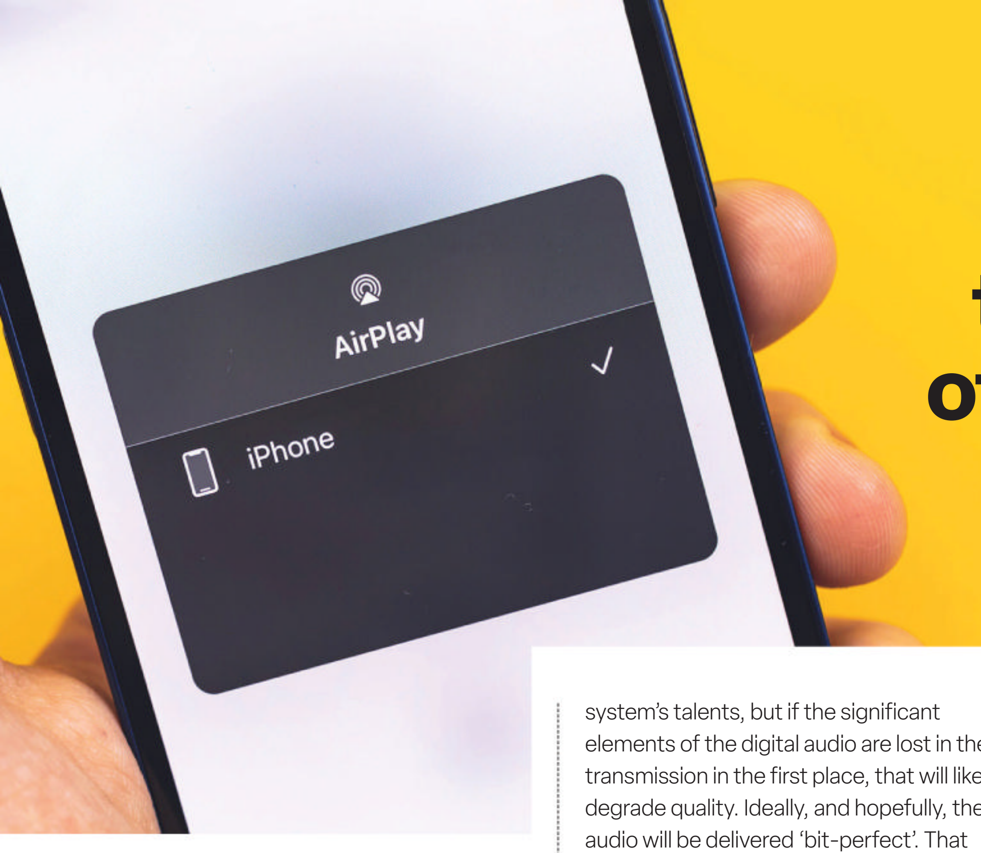
Like TV picture technology, ANC has come such a long way in the last decade that its future development in the next one could well be, comparatively speaking, incremental. Harman’s Herje recalls how it “came out of the aviation industry many years ago with single microphone configurations with static implementation to cancel out ambient noise at a high cost, making it a novelty item reserved for premium consumer headphones. It consumed a lot of power and had a major impact on playtime, making it a situational feature used only when ‘needed’”.

Of course, it’s now evolved from analogue to fully digital, with DSP development being spurred by the increased computational speed, performance potential and accessibility of computer chips (system-on-chips, or SoCs), not to mention, as Technics notes, their ability to facilitate ever-advancing AI technology. This has opened doors for developing more adaptable and adjustable ANC systems while fuelling market growth, product offerings and brand competition.

“It has now become an ‘always on’” feature,” says Herje. And is no longer the reserve of only premium pairs. Additionally, Beyerdynamic and Sennheiser note the improvement of acoustic and electronic components, such as digital low-noise MEMS microphones, and how, says Ern, “they will keep on doing so in future”.

Ultimately, though, it seems active noise cancelling technology has an evolutionary rather than revolutionary near-future path ahead of it, with AI advancements sure to keep DSP moving forward. “We might not expect a quantum leap in ANC, but surely there will be further improvements in the coming years,” says Ern.

Becky Roberts



Getting to the bottom of bit-perfect casting (...and wiring)

Stephen Dawson dons his detective cap once more as he investigates how 'bit-perfect' the popular Apple AirPlay, Google Cast and DLNA protocols really are...

You have music on your phone or perhaps on some network resource in your home. And you *are* at home. In your home, you have a wonderful high-fidelity music system through which you want to listen to that music. So you *cast* that music. That is, you dial up the music on your phone (or tablet) via an app and tell it to play on some device connected to your system.

The three main ways of casting in this context (not counting the various proprietary ones) are Apple AirPlay (typically known as 'AirPlay 2' nowadays), Google Cast, and DLNA/UPnP (which stand for Digital Living Network Alliance and Universal Plug and Play respectively).

So which of these protocols is most accurate in delivering the source's digital audio to your system? That's what I set out to discover, following my similar investigation into whether Tidal was truly lossless (as featured in *Australian Hi-Fi* magazine issue 538). How good the sound is will, of course, largely depend on your system's talents, but if the significant elements of the digital audio are lost in the transmission in the first place, that will likely degrade quality. Ideally, and hopefully, the audio will be delivered 'bit-perfect'. That is, every sample in the original PCM file will arrive at your system's digital-to-analogue converter (DAC) with its value *exactly* preserved. It will then be up to the rest of your system to do the very best it can with all those bits — just as it would from, say, a CD transport.

There is a fourth method of delivery that could also potentially be bit-perfect: via a wire. This would be connecting the Lightning or USB socket of your phone/tablet directly to your DAC using a cable.

As with the various methods of casting, there is a wealth of information out there about which ones work properly (i.e. which are and aren't bit-perfect), and much of it conflicts. Here, I'm going to sort it all out...

METHOD

This is the boring bit and naturally you are free to skip it, but it is necessary to give confidence to the results. I used two short test tracks:

- A rip from of the 2009 remaster of *Eleanor Rigby* from The Beatles' Revolver CD album, which is in standard CD format — 16-bit/44.1kHz PCM
- A rip of the stereo version of *The Awakening* from the DVD Audio of Alice Cooper's Welcome to My Nightmare, which is in 24-bit/96kHz PCM (losslessly compressed using MLP on disc, but expanded to the original PCM).

The procedure for testing each casting method is as follows:

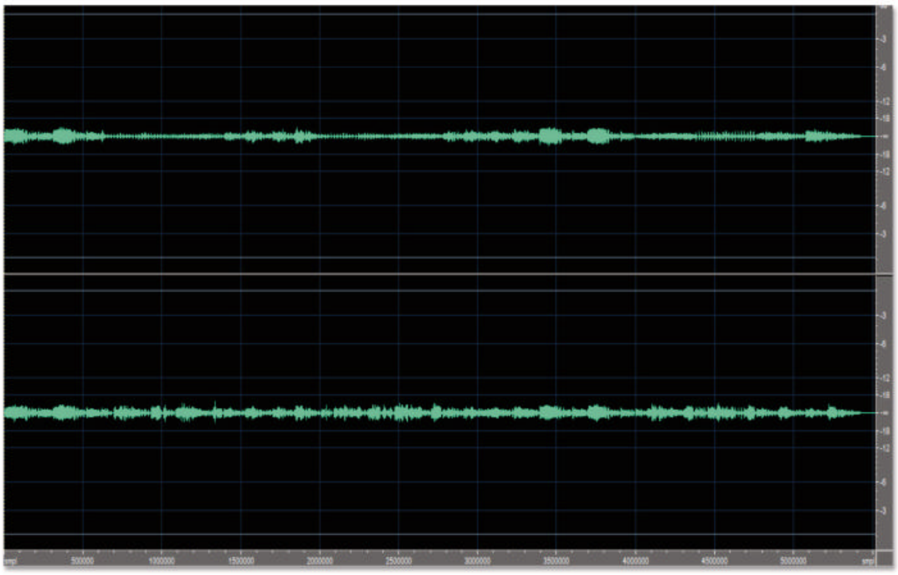
1. I played the music file using an iPad or one of three Android devices, and several apps, casting it to one of several devices.
2. I connected the S/PDIF output of the receiving devices to an RME ADI-2 Pro FS R Black Edition ADC/DAC.
3. That ADC/DAC was connected via USB to my computer, which I used (with Reaper DAW software) to capture the digital stream.
4. I then chopped the ends off the recorded file to match the original rip, and merge-pasted it into the original rip to see what was left.

After this inverse merge, a bit-perfect match would result in a digital music file the exact length of the original track, but with every single sample at zero. I would get a flat line, in other words.

For the wired tests, it was much the same except that with the iPod or Android device I used a USB-C-to-optical adapter dongle (CUI ILUX UCO-B1) to feed the device's output to the RME ADC.

For the connections, I used non-descript cables and connectors throughout. For example, with the iPad wired test, the CUI ILUX adaptor ($23.99 from Amazon!) was plugged into a standard USB-C-to-USB-A adaptor, which in turn was plugged into a USB-A-to-iPod-32-pin camera kit adapter, which was then connected to the iPad via an iPod-32-pin-to-Lightning adaptor. Phew. Despite this rather convoluted chain, you will notice as I proceed that in at least one case, every single one of the 29 million

> The source device, the app you use, the settings within it, and the receiving device all have an impact



Apple Airplay 2 results using an iPad

samples in *The Awakening* track was bit-perfect. Where it wasn't, it was due to the device or the communication protocol.

AIRPLAY 2

For obvious reasons, I could only test AirPlay 2 with an iOS device. I therefore used an iPad (Gen 6), alongside two different receiving devices: a WiiM Pro music streamer and an Apple TV 4K. Since the latter doesn't have an S/PDIF output, I used an HDMI breakout box to separate the audio and convert it into S/PDIF for delivery. (The HDMI breakout box does not alter the format in any way; I use it with my Oppo Blu-ray player to extract DSD audio from SACDs to take advantage of the superior performance of my DAC.)

Grok AI had told me, to my surprise, that AirPlay 2 (at least sometimes) employed the Apple Lossless format for transmission. The CD-standard track *was* delivered to the WiiM Pro streamer with the correct sampling frequency (44.1kHz), though it soon became apparent that lossy compression had been employed, or other alterations had been applied to the track.

After subtracting the recording of the stream from the original, the average level of the remainder — that is, the difference between the two — was around -43.3dB, while the peak difference was just -21.6 (the smaller the negative number, the louder it is). Listening to the remainder, it sounded similar to the original, just a lot quieter and somewhat distorted.

But hey, while the WiiM Pro supports AirPlay 2, it isn't an Apple device, so I repeated the process with the Apple TV 4K. Or rather, I intended to. It actually wasn't worth doing the recording because with the Apple TV everything was being converted to 48kHz sampling. I tried sample rates between 44.1kHz and 192kHz and they all came out the same. That is not bit-perfect.

I went back to check the different sample rates using the WiiM Pro streamer and it turned out that all the audio had been converted to 44.1kHz by Apple AirPlay 2. Why the difference? Who knows.

But what I do know is that you would expect a system-wide digital audio output protocol to employ a fixed sampling rate. Because, of course, at the same time as you're playing music, the iPhone or iPad might also have to produce audio from other apps, or even notifications from iOS itself. They all must have the same sampling frequency so that they can be mixed together for casting.

To state the obvious, high-resolution audio could not be bit-perfect because of the sample rate conversion.

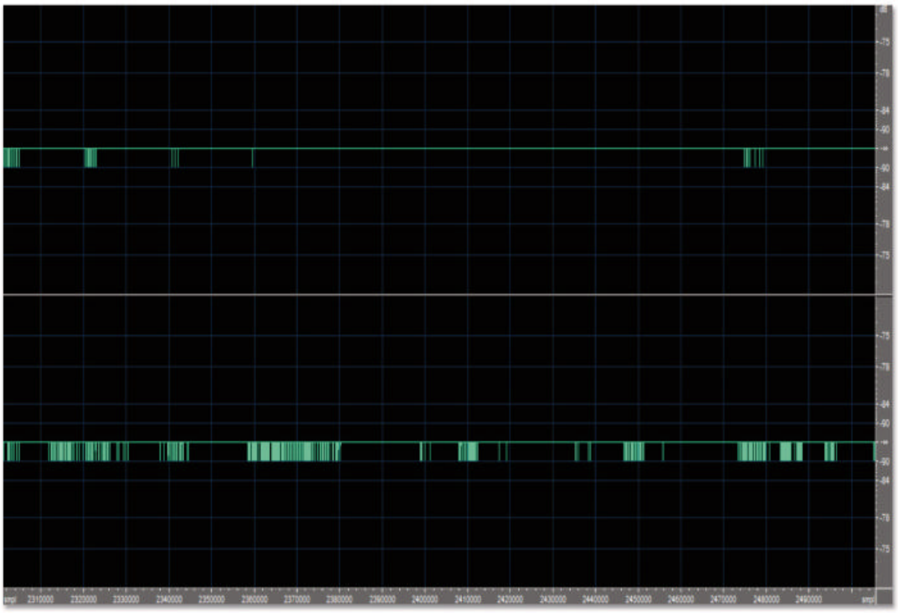
GOOGLE CAST

That stuff about system-wide audio handling also explains why there are two quite different forms of Google Cast. Many AV apps directly support Google Cast, even versions developed for iOS. They connect the app directly to the receiving device.

But you can also use Google Cast within the Google Home app to cast selected apps (or anything on the phone) to a compatible playback device. In this mode, Cast is not bit-perfect, since every digital signal is converted to 48kHz sampling.

But from within certain apps, it is... *almost* bit-perfect. I used the BubbleUPnP app on three devices running various versions of Android: a Google Pixel 6 phone, a Samsung Tab A tablet and a FiiO M11 Plus portable digital audio player. BubbleUPnP allows you to directly select Cast-compatible devices for playback. For example, I can (but don't, natch) use that app to send music to a Google Nest Mini.

So almost bit-perfect, eh? Using this app on the trio of devices to send 44.1kHz audio via Google Cast to the WiiM Pro streamer, a significant proportion of samples were misplaced... but only by a mere -1 compared to the original. I don't understand what is going on here. I can affirm that this is not dither added somewhere in the stream. (For the uninitiated, dither is the random displacement of samples by one bit.) The displacement here was neither random nor orderly. Zooming in over the full length of the song, the left and right



Google Cast results using a Pixel 6

DLNA works to perfection with 24-bit music… it seems to be the best way to stream audio wirelessly

channels looked like two UPC barcodes, but with many of the displacements clumped. Yet a 22-second section in the left channel was absolutely bit-perfect, while the number of displacements in a row appeared to top out at about seven samples.

Oddly, the differences were identical with all three devices, meaning that this was somehow being generated algorithmically. The result was a difference from the original averaging at: -116dB, peaking at -90dB. In other words, while not strictly bit-perfect, the differences were utterly inaudible.

That was just one receiving device, though. I therefore tried Google's own (now discontinued) Chromecast Audio streamer dongle, and that was a little less than almost bit-perfect. Instead of any given sample being out by only one bit in one direction, it could be out by anywhere between -2 and +1. The vast majority were out by -1, 0 or +1, with only a few out by -2.

To triple-check, I also tried a Google Chromecast TV dongle. I plugged its HDMI output into the HDMI audio breakout box, but once again the audio was converted to 48kHz, thus not bit-perfect. That's probably because this dongle, like the Apple TV, is really intended for video.

How about high-resolution audio? I tested this only with the WiiM streamer, and again the result was almost bit-perfect. There was just one bit of variation from 24-bit perfection, this time in the positive direction. And this looked a lot more like dither. The effect of this would be a white noise floor of -144.5dB, which isn't something I would be particularly concerned about since it sits under the natural noise floor by at least 30dB.

DLNA

So far, so close, and yet still short of perfection! Not for much longer…

Out of 20 different equipment and streaming protocol trials with the CD-standard 16-bit/44.1kHz tracks, nine delivered an absolutely bit-perfect performance — and every one of those used DLNA. Indeed, every trial of CD-style sound with DLNA delivered bit-perfection.

I used DLNA on the WiiM app (the standard connectivity for it) on both the iPad and the Pixel 6 phone. I used DLNA with the BubbleUPnP app on the Pixel phone, Samsung tablet and FiiO music player, and with the MConnect HD app on the iPad, and every single one gave a perfect result on the CD test track.

There's nothing more to be said about that really. Well, there is one thing. Knowledgeable sceptics may ask: with DLNA, doesn't the phone/tablet simply act as a controller, telling the music to stream directly from the network storage to the streamer? In other words, the music itself isn't casting through the phone/tablet.

Except that with all of these, I also loaded the test track on both the phone and the tablet and repeated the tests. The only way for the music to get to the streamer in this instance was through the air, carried by the test protocol.

What about the 24-bit/96kHz test track then? The results here were mixed on the two different trials. With the Pixel 6 and BubbleUPnP, I had near perfection: that 1-bit dither-like noise at -144.5dB, just the same as with Google Cast. But with the iPad and the MConnect HD app, I had absolute perfection, with not a single dot of difference in more than 29 million samples! In both scenarios I used the WiiM Pro streamer, so it appears it was not contributing the dither, nor was the Reaper DAW software. I couldn't find any setting with the Pixel 6 or BubbleUPnP app that might have changed that dither.

Anyway, in short, DLNA works to perfection — or so close to perfection — with 24-bit music that it seems to be the best way to stream audio wirelessly.

WIRED

But let's say you have a USB Type-B port on the back of your DAC, allowing it to act as a USB Audio Device. I'm assuming USB Class 2 here, which supports resolutions beyond the 24-bit/96kHz limit of USB Class 1. Maybe you don't quite trust the wi-fi connectivity in your location or would simply rather go the stabler cabled route.

It turned out that with CD-quality audio, both the iPad and the Pixel 6 were capable of delivering bit-perfect performance. In the case of the Pixel 6, though, I had to use the right app. I found that with BubbleUPnP, the output was converted to 48kHz on one DAC, and 96kHz on two others. Why the difference? It certainly eluded me.

I instead used an app specifically designed for USB output: the USB Audio Player Pro. By default, this sends out CD-standard audio with 24 bits of resolution for some reason, but I found a couple of app settings that made it bit-perfect, after which it delivered 16-bit/44.1kHz properly. With this app, bit-perfection was achieved. As it was using both the MConnect and standard Apple Music apps on the iPad.

Moving to hi-res audio, I discovered something interesting with the iPad. Using MConnect, the sound came through *kind of* bit-perfect. The difference was clear: only the most significant 16 bits were used while the bottom 8 bits were ignored. In other words, although the full frequency range provided by 96kHz sampling was retained, only a 16-bit resolution was available.

Finally, delivering 24-bit/96kHz over a wire from the Pixel 6 using USB Audio Player Pro gave me another 'almost'. Again, it included one bit of dither, amounting to a noise floor of around -144dB.

CONCLUSION

Unfortunately, it seems there is no snappy answer to the question 'what is the highest quality way of getting music from my device to my audio system?' It turns out to be complicated: the source device, the app you use, the settings within it, and the receiving device all have an impact.

Intuitively, you would think the wired route would be the best, but at least in my testing environment, the most consistent perfection was achieved by the iPad running the MConnect Pro app and DLNA. Indeed this even outperformed a wired connection from the iPad. But the various Android devices were almost as good: bit-perfect with DLNA to the WiiM streamer on CD quality, and markedly better than the iPad when it came to 24-bit audio connected by wire.

Good luck experimenting yourself!

Technics SL-1300G

Turntable

- Powerful and punchy presentation
- Impressive sonic stability
- Very easy to use

- Lift/lower mechanism feels vague and cheap
- Supplied signal leads are poor

RRP **$4,999**

Ask any budding DJ what their dream turntable is and a Technics one would inevitably be high on their list. The brand's range of direct-drive record players has carved out an enviable niche over the years, achieving almost legendary status in DJ circles thanks to their high-torque motors, tank-like build and canny range of features. It is fair to say these positive vibes carry through to the consumer hi-fi side of its catalogue too.

Technics' new SL-1300G is a particularly fine example of a breed that can stand toe-to-toe with the best of the competition without issue. The company's heavyweight engineering approach is so different from the low-mass belt-driven Rega Planar 8, its most obvious direct rival, that it is hard to see them appealing to the same person.

DESIGN & ENGINEERING

This is a deck that inspires confidence from the moment you take it out of the box. It's a heavy unit at 13kg and feels as robust as you like. It comes supplied with a nicely engineered 'S-shaped' aluminium arm that feels admirably smooth and precise in use. The arm has a detachable headshell, too, making changing cartridges a breeze once the initial set-up is done. However, all is not perfect: the lift/lower mechanism feels vague and not quite of the quality you would reasonably expect at this level, slightly undermining the otherwise positive user experience.

Unusually, Technics does not supply the SL-1300G with a fitted cartridge as many rivals do. The handful of retailers selling the turntable online in Australia don't typically offer a partnering cartridge in their product listings, though it would only take a call or a trip to your local dealer to get advice on some suitable options. Consider the likes of Nagaoka's MP200 moving-magnet design ($649) a good starting point, though the deck is capable enough to make more ambitious options viable too.

At the heart of this Technics is a newly developed direct drive system that combines a twin-rotor motor with the recently developed Delta-Sigma Drive control. The motor is coreless, which eliminates the uneven rotational effect known as 'cogging', and the board that supports the stator coils is now double-sided and reinforced to improve rigidity,

START · STOP
33
45
Technics

which allows the motor to run more smoothly. Technics is especially proud of its Delta-Sigma Drive system; a clever technology that uses the company's extensive experience with PWM (Pulse Width Modulation) signal processing to provide the motor with a purer, low-noise power feed.

The foundation of the motor drive system is the power supply, of course. Here, engineers have used a high-frequency design that avoids the use of a large transformer (so avoiding the mechanical vibrations it generates) and is claimed to deliver "a stable supply with less rippling and humming". The power supply switching frequency of "above 100kHz" is far beyond the audible bandwidth and so shouldn't adversely impact the SL-1300G's sound quality.

A classy-looking triple-layer platter sits on the motor. It comprises a die-cast aluminium core topped by a brass weight, all damped by a dense rubber layer on the underside. There is a relatively heavy rubber mat that sits on top and that also helps to control resonances. The platter is dynamically balanced to ensure it doesn't introduce any vibrations into the structure when spinning. This is this kind of obsessive attention to detail that breeds confidence in the product.

The SL-1300G's plinth is substantial, using a combination of die-cast aluminium and BMC (Bulk Moulding Compound) to create an inert and solid environment for the cartridge to work. Its beautifully finished aluminium top panel is reinforced between the motor and tonearm for added rigidity and the deck sits on four easy-to-adjust feet that use silicon rubber in their construction to reduce the effect of external vibrations. The output connectors are tucked away underneath the plinth, and while that looks neat, it makes plugging in the signal leads a little awkward. If you do buy one of these decks, replace the supplied signal leads as soon as possible; they are of low quality and degrade the sound notably.

IN USE & LISTENING SESSIONS

Once up and running, the SL-1300G is a breeze to use. It spins up to speed almost instantly with minimum fuss and noise. Conventional belt-drive alternatives feel like they wheeze into action in comparison. Speed change is achieved at the simple press of a button, with 78rpm welcomely on the menu alongside the usual 33⅓ and 45rpm options.

Like any turntable, the SL-1300G will benefit from a stable, rigid and low-resonance support, though it is less sensitive to external vibrations than most alternatives. For this test it is connected to a reference-level system comprising the Cyrus Phono Signature/PSX-R2 phono stage feeding a Burmester 088/911 MkIII pre/power amplifier and ATC SCM50 loudspeakers. There is also a PMC Cor integrated amplifier and Epos ES-14N loudspeaker combination on hand as a more price-compatible option.

As for cartridges, this test takes in the Nagaoka MP200 as well as a higher-end moving-magnet, Vertere Acoustics' Dark Sabre. (This doesn't appear readily available online in Australia at the time of writing, although it is a model-up version of the $1,895 'standard' Sabre which is. Just for context, the Dark Sabre's stylus tip is a single crystal micro elliptical design that has been precision cut to shape before being attached directly to the two-piece telescopic aluminium cantilever. In the standard Sabre, the elliptical diamond is sintered, not naturally formed, and is bonded to a titanium shank before being punched through the cantilever. The Dark Sabre method is a more precise way of doing things and allows the tip to track the record groove more accurately. This one change allowed Vertere to tweak the cantilever angle and design slightly, and also fine-tune the angle of the generator. This slightly different generator position means that the rigid aluminium cartridge body can be machined into a subtly different shape, which in turn changes the distribution of its mass. These are all small tweaks, but their cumulative effect is significant and justifies the extra spend.)

Just to see how far the Technics can be pushed, a Kiseki Purpleheart moving-coil cartridge, which costs $5,195 — a little more than the turntable itself! — was also attached for a period.

As it transpired, while this Technics is good, it isn't quite to the level that justifies the use of the Kiseki... no real surprise there. However, it did work superbly with the Nagaoka and Vertere designs. The SL-1300G delivered a generous, big-boned presentation that sounded unusually stable. Listening to Nitin Sawhney's Human album, it was hard not to be impressed

It spins up to speed almost instantly... belt-drive alternatives feel like they wheeze into action in comparison

by the power and punch of the bass communicated. It is full-bodied, nicely layered and delivered with class-leading slam. Higher up the frequency range, the Technics proved a clear and well-organised performer, too. Vocals came through with clarity and were nicely separated from the rest of the mix. There was enough in the way of dynamic nuance to allow songs such as *Fragile Wind* to hit home with the emotional energy you could hope for.

Rhythmically, there is no denying the Technics' confidence and drive, though it sounds surefooted rather than exuberant. Rega's Planar 8 is livelier and more articulate in general, albeit lacks the SL-1300G's authoritative and solidly planted presentation.

Switching genres to Beethoven's 9th Symphony and the Technics shined thanks to a combination of scale and muscle. It communicated the majesty of an orchestra in full flow well, and had the composure to keep track of multiple instrumental strands without losing a grip. The tonality of a record player mostly comes down to the cartridge, and the SL-1300G does what any good turntable does: reflect the character of the one fitted.

Large-scale dynamics were delivered with conviction while the orchestra felt grounded within the soundstage. Stereo imaging was wide and crisp, too, with instruments staying locked in place even when the music became demanding. Importantly, the deck conveyed the feel of the music well enough that its own sonic signature became of secondary importance. Like any good piece of hi-fi, it left the attention focused on the recording rather than itself.

CONCLUSION

Technics' SL-1300G turntable is a great alternative to the existing class leaders. It is superbly made, easy to use and well-engineered. You'll love its fuss-free nature almost as much as its powerful and wonderfully stable sonic character. If you are looking for a record player at this level, this one deserves to be heard.

Technics
SL-1300G
DIRECT DRIVE TURNTABLE SYSTEM
MAR 100V
10W 50Hz/60

SPECS & CONTACT

Type: Direct drive
Motor: Brushless DC
Operation: Manual
Speeds: 33⅓, 45, 78rpm (actually 78.26rpm)
Speed change: Electronic
Wow and flutter: 0.025%
Tonearm: 230mm Static Balance (15mm overhang)
Tonearm height adjustment: 0-6mm
Tonearm stylus pressure adjustment: 0-4g
Power supply: AC 220-240V
Power consumption: 10W on; 0.3W off
Dimensions (HWD): 17.3 x 45.3 x 37.2cm
Weight: 13kg
Finishes: Silver, black

T: 132 600
W: www.technics.com/au/

esoterica

REVIEWED

POWER AND GLORY

Modwright's impressive mono amps deliver valve-like warmth from solid-state circuitry

KWA 99
0
25
50
75
100
Power
Watts
ModWright Instruments
PWR

IDEON audio
usb
dsd
22.6 MHz
fast roll-off minimum phase

REVIEWED

GREEK GOD OF SOUND

The ideal DAC for big digital libraries and even bigger wallets

IDEON
audio
usb
dsd
22.6 MHz
fast roll-off minimum phase

Ideon Audio IΩN

Digital-to-Analogue Converter

+
- True esoteric performance in every way
- Versatile configurations

−
- No remote control or optical input

RRP **from $27,900**

Ideon Audio fits firmly into the Audio Esoterica camp. At $27,900, this IΩN DAC is far from the Greek company's flagship model. Indeed, the Athens-based brand notes that the IΩN benefits from "trickle-down technologies and R&D gained" from working on its top-of-the-range Epsilon DAC.

THE EQUIPMENT

After lugging the significant weight of the carton-ensconced DAC up the stairs, I was surprised at how compact the extracted unit was. While a little wider than a standard component at 46cm, it is only 8cm tall and 30cm deep. Even so, it weighs a very hefty 13kg. This is one sturdily built device.

One reason why the carton was so heavy was that underneath the cardboard, the DAC was packed within a nice sock within a sturdy metal travel case. Ideon Audio's Australian distributor, Absolute Hi End, confirmed this is standard packaging for the IΩN. No matter where you are, Ideon clearly wants your high-end DAC to arrive in perfect condition.

Four versions of this unit are available. This silver-finished review model ($25,900), simply the 'IΩN DAC', also comes with a black finish ($28,550). Then there is the 'IΩN & Pre-amp' variation in silver ($35,950) and black ($36,500) whose name speaks for its distinction: it has preamplification built-in. The rear panel of the DAC-only IΩN simply features cutouts for the balanced and unbalanced inputs and outputs offered by the DAC/preamp version.

The design is simplicity itself. The only controls are a rear-panel power switch and a front-panel dial that can be turned, pressed and hold-pressed to control

> The thing about DACs at this level is not so much the chip employed but what's around it. And that's Ideon Audio's specialty

the unit. There is no remote control (the preamp version does come with one, however). The front panel also hosts a four-line screen displaying all the information that you need, such as the selected input and input format (PCM or DSD), the output level, the sampling frequency, and the digital output filter currently engaged.

The default output level is fairly hot: 8.8 volts RMS FS via the balanced outputs, and 4.4 volts via unbalanced. The Medium level is -3dB, while Low (which I mostly used so that the output was in line with my other gear) is -6dB. If you select Variable, the dial can act as an attenuator.

You get a choice of seven digital filters, none of which is (thankfully, in my opinion) a NOS one.

Joining the aforementioned outputs are three digital inputs: a USB Type-B for connecting computers or laptops, a coaxial (RCA), and one that can be configured as either a BNC socket for another digital audio input, or an AES/EBU-capable balanced XLR socket for a professional digital connection. There is no optical input.

Inside handling the core digital-to-analogue conversion is an eight-channel Hyperstream ESS 9028PRO DAC chip supported by Ideon Audio's own in-house-developed firmware. But the thing about DACs at this level is not so much the chip employed but what's around it. And that's Ideon Audio's specialty.

Such important design aspects are the sturdiness of the casing, the unique ultra-low-noise power supply that features additional noise-suppression technology, the 'triple distillation' noise-elimination system on the USB input, and the modular upgradability of the whole design, to give just some examples.

Eliminating noise on the USB input is vital. Over the years I have used several DACs that worked rather well... until they were plugged into a noisy PC via USB, at which point they allowed significant and sometimes clearly audible noise from the USB connection through to the analogue outputs. There was no danger of that happening here, and I wouldn't quibble in the slightest with Ideon Audio's A-weighted 122dB signal-to-noise ratio.

The IΩN supports PCM audio up to 24-bit/192kHz via the coaxial and AES/EBU inputs, and up to 32-bit/384kHz via the USB input, which can also play ball with 8x native DSD (DSD512).

I checked the non-USB inputs with signals from 16-bit/44.1kHz to 24-bit/192kHz and they worked perfectly.

COMPUTER USE

If you're connecting a Windows PC, you should install Ideon's custom DAC driver software and set your playback software to use its ASIO interface, or at least the WASAPI interface. That will allow it to deliver bit-perfect digital sound to the IΩN.

If, for some reason, you want to use the (default) Windows Direct Sound driver, you should change a setting. When I first checked the properties of the IΩN using the Manage Audio Device control applet on a Windows 11 notebook, it showed support for all PCM sampling rates from 44.1kHz to 384kHz, but only with 16 bits of resolution. That's easily fixed by tapping the little upward carat near the right end of the Windows taskbar to reveal hidden icons, and there you should see a red-coloured stylised 'T'. Click on that and the 'Ideon Audio USB Audio Device Control Panel' will open. Click on the 'Format' tab and ensure the drop-down list under 'Output' is set to '2 channel(s), 32 bits'. That will allow Direct Sound to use 16, 24 or 32 bits.

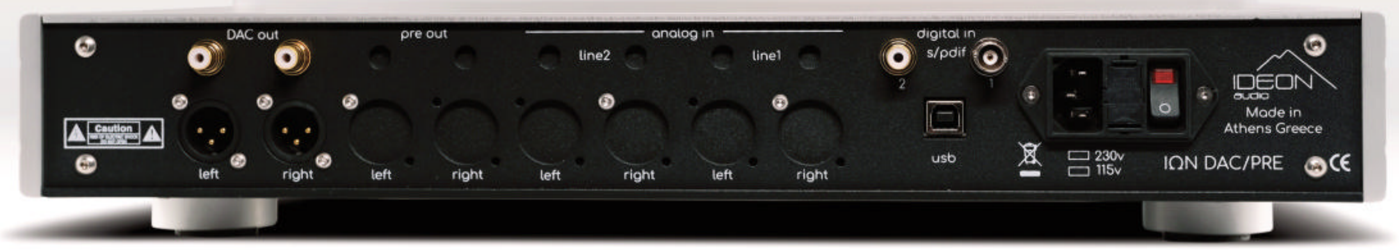
From a Windows computer, using JRiver Media Center 27, all my test tracks (bar two) were supported. They included DSD256 and DSD512 when delivered as direct DSD using ASIO (they don't work in DoP format) and 24-bit/384kHz PCM.

DSD64 and DSD126 (in DoP format), along with all those PCM formats, also worked fine using the WASAPI interface.

Neither 705.6kHz nor 768kHz PCM (via the ASIO driver) worked, producing horribly distorted sound, but that's not the end of the world as no such music tracks are available anyway.

When I switched over to a Mac — I must say, my Mac Mini looked very swish sat atop the IΩN! — things were excellent with PCM and terrible with DSD. Macs use 'Core Audio', and with them running JRiver Media Center 27 you can choose either Mac-managed Core Audio or an exclusive Core Audio connection to your external USB device. My initial efforts with DSD

THE DAC-only IΩN I tested simply has the preamp-facilitating sockets filled in



IDEON
audio
usb
pcm
384.0 KHz
hybrid fast roll-off minimum phase

produced a horrible rattle sound.

My theory was inadequate bandwidth, so I experimented and it turned out that, as with Windows, MacOS recognised the IΩN as a 16-bit unit. As JRiver doesn't allow direct DSD on the Mac, it uses DoP (DSD over PCM), which places the raw DSD data in the bottom 16 bits of a 24-bit container and places DoP flags in the top 8 bits. I'm guessing that the DAC was consequently receiving only two thirds of the DSD stream, along with some random bits.

This is easily fixable: open up the Audio Midi Setup app in the MacOS launcher (its icon resembles a piano keyboard) and change the default format under 'IDEON USB Audio' to '2-ch 24-bit integer 44.1kHz'. The sampling frequency doesn't matter because it automatically changes. Both forms of DSD (via DoP) then played successfully — and audibly beautifully — through the IΩN.

There seems to be a setting in the USB connection that makes both Windows and MacOS think they should default to 16 bits with the IΩN. I wonder whether Ideon could change that for hassle-free use, if that is even possible. I tried three other DACs from different brands; none had this problem.

Finally, I should note that, unlike the Windows machine, the Mac didn't recognise the DAC's 32-bit capability. That probably doesn't matter; while 32 bits is often used in audio processing, I've never seen 32-bit music. That said, the Mac recognised the 32-bit capability in those other DACs I tried.

LISTENING SESSIONS

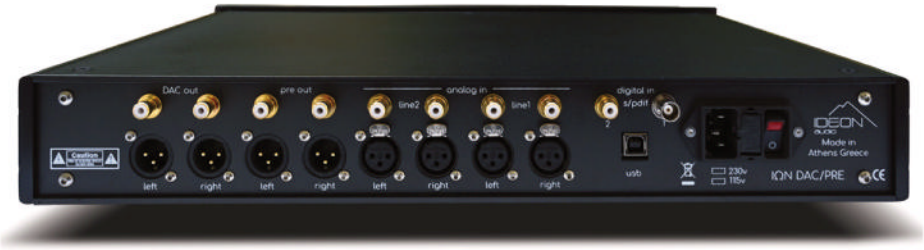
While I checked the unbalanced output performance, which sounded fine, I predominantly used the IΩN DAC's balanced outputs during testing. After all, if you're spending this much money on a DAC, presumably your preamplifier supports balanced inputs. I almost exclusively used the 'Fast Roll-Off Linear Phase' filter setting, too. (I know many listeners prefer the slow roll-off settings from ESS and similar DAC chips, but personally I like this one, which I have measured as by far the most accurate in reconstructing original signals.)

Such is its shrewd transparency, the IΩN even revealed little unexpected gems I was previously unaware of

As for partnering equipment, I mostly used McIntosh's C2800 tube preamplifier (which I also had a review sample of at the time) and MC312 power amplifier, driving Dynaudio Contour 20i loudspeakers. For sources, there was, of course, the Mac Mini and Windows 11 notebook (USB), plus a WiiM Pro streamer (coaxial). I had a slight dilemma testing the AES/EBU input since none of my sources sport those outputs, so I employed a workaround: I connected via optical a Cambridge Audio CXC CD transport to the RME ADI-2 Pro FS R Black Edition DAC/ADC, which was then used to convert the audio signal to AES/EBU before being fed to the IΩN.

I began by luxuriating in a collection of 24-bit/192kHz jazz recordings from the famous Blue Note label, mostly from the late 1950s to the mid-60s. A little informal

The DAC & preamp version offers RCA and XLR pre-outs (2) and inputs (4)



categorisation is in order here. In the early 60s, the recording quality for pop and rock music was almost uniformly poor by modern standards. For classical music, it was often pretty good, although not as transparent as it would become in later decades. Jazz music from that period, however, is typically stunning, largely because the ensembles tended to be small, the microphones were high in quality, and the mixing (the performances were usually 'live' in a studio) and post-production were minimal. Blue Note albums are fine examples of this.

Streaming *Melancholy Mood* from Horace Silver's Blowin' the Blues Away (1959), I was stuck first by the superb realism of Silver's piano, especially the carefully placed left hand with the multitude of overtones produced by each chord. The coherence was simply perfect, unable to be improved upon. Eugene Taylor's bass was further back and naturally shared much of the same frequency space as the piano's bassy notes, but that didn't impede it from coming through the mix as a distinct and whole instrument.

The title track of John Coltrane's Blue Train (1958) covers the broader range of jazz ensemble instruments, each of which was again magnificently conveyed and easily separated from the others. Such is its shrewd transparency, the IΩN even revealed little unexpected gems I was previously unaware of, such as the occasional overpressure on Lee Morgan's trumpet against the microphone, which adds a touch of intimacy to the virtuosity.

I noticed no significant difference between 16-bit/44.1kHz CDs via AES/EBU and CD-standard audio from a NAS device delivered via the WiiM streamer (coax).

In 1998, George Martin released the In My Life CD album, comprising mostly Beatles songs covered by his "friends and heroes". I tend to find Beatles covers underwhelming, but under Martin's management most of the tracks here are extremely good, particularly the second one, a lounge bar rendition of *A Hard Day's Night* sung by, surprisingly, an impressively professional Goldie Hawn. Again, nothing was hidden through the system — not even Hawn's intimate vocal presentation due to a slight microphone compression.

Onwards with the female vocals! The early EP by George (the Aussie indie group, not the Beatles producer) from 2000, Bastard Son/Holiday, is one of those independently produced CDs that appeared when reasonably priced, decent-quality recording technology first became available. It's created with a touching, unprocessed naivety and is all the better for it (the professionally produced follow-up album is, in my view, inferior). Through the IΩN DAC, this clean, unadorned (unadulterated?) performance was presented exactly as it is. Katie Noonan's pure vocals on *Holiday* soar over an exciting mix full of life and vigor, and listening to it was equally exciting, with everything present and placed as it should be.

Over to the USB input, I sat down with 2014 album Four Foot Shack by Les Claypool's Duo De Twang, with its stomp version of Primus' *Jerry Was a Race Car Driver* and an utterly undisco-like *Stayin' Alive* cover. Claypool, as usual, provides not only voice and bass underpinning but as often as not also the higher strings on his bass act in place of a rhythm guitar. Turned up loud, as it should be, all this was delivered with fine coherence and fitting dynamism. The soundstage basked in an excellent sense of space and air, both around the instruments and between them.

Finally, I listened to a rip of Tchaikovsky's Capriccio Italien from my NAS via the Mac. Telarc actually fibs on the box of the DVD Audio disc from which I ripped it, claiming that the stereo version is 24-bit/88.2kHz. While it is indeed 24 bits, the original DSD has been converted to 44.1kHz. That apart, the recording is unprocessed, as was Telarc's wont, and it positively shined through the IΩN DAC. The full orchestral sound was gorgeously layered, wide and deep yet precise in placement. The bass drum here is provided without filtering or compression (also Telarc's way), and at its climax the DAC turned it into full-blooded bass for the rest of the system to cope with as best it could.

In short, not one aspect of the Ideon Audio DAC's sonic performance could even in the slightest way be impeached, passing every test I threw its way with flying colours.

CONCLUSION

If you want cutting-edge digital-to-analogue conversion provided at the highest possible level, need no more than three source devices handled and are fortunate enough to be shopping at this kind of price level, you really ought to experience Ideon Audio's IΩN DAC before making any firm decisions. It may not be the Greek brand's top-tier model, but in no way does it fall short of delivering high-end audio bliss.

Stephen Dawson

SPECS & CONTACT

Design: ESS 9028PRO DAC
Inputs: USB Type-B, coaxial digital (RCA), coaxial digital (BNC), AES/EBU (XLR)
Outputs: unbalanced RCA, balanced XLR
Supported digital formats: PCM up to 32-bit/384kHz, DSD128 (DoP), DSD512 (native)
Total harmonic distortion (THD): -110dB (A-weighted 20Hz-20kHz)
Signal-to-noise ratio (SNR): >122dB (A-weighted 20Hz-20kHz)
Channel separation: >130dB
Dimensions (HWD): 8 x 45 x 30cm
Weight: 13kg
Warranty: Seven years

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KWA 99
Power
Watts
PWR
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Modwright KWA 99

Mono Power Amplifiers

+
- Insightful, warm sound
- Sufficient power
- Great form factor

−
- Inaccurate meter calibration
- Can get quite hot!

RRP **$16,250 pair**

While Modwright has been around as a company since 2000, it did not build its first product (the PH9.0 vacuum tube preamplifier) until 2003. Up until that point, the US company's founder and owner, Dan Wright, had been modifying other manufacturers' designs rather than producing his own. In fact, Wright had been in the audio modification business for many years prior to 2000 but had simply not bothered to incorporate as a legal entity.

The PH9.0's circuit topology was based largely on Alan Kimmel's 'Mu Stage' design, which itself was originally developed as a modification for the Dynaco ST70 stereo valve amplifier, then available as a kit for home DIY builders. Kimmel's original Mu Stage circuit was published in 1993 in *Glass Audio* magazine, but a version of it was used in a bestselling preamplifier kit developed by Welbourne Labs called the "Compleat Hybrid Line Stage" (and yes, it was spelt 'Compleat' rather than 'Complete').

Design input from Kimmel is evident in many of Modwright's designs because, according to Wright, a 'Solid State Music Stage' voltage gain stage developed by Kimmel is at the heart of its KWA 100 and KWA-100SE power amplifiers as well as its KWI 200 integrated amplifier. Indeed 'KW' in the model names stand for 'Kimmel/Wright', so the same is no doubt the case for the KWA 99 mono power amplifiers I am reviewing here.

According to Wright, that trademarked Kimmel design is "a unique and proprietary design using all transistors, a single gain stage and zero global feedback. It is transformer input-coupled and direct-coupled from there out. Sonically, Alan feels that the circuit delivers the holographic imaging and tonal warmth of tubes but without any excessive coloration, while also delivering the sonic strengths of solid state, those being tighter and more controlled bass, extended highs and an extremely low noise floor."

Although Wright is a great fan of valves (he says the ear-opening moment that kick-started his interest in high-fidelity sound was when he first heard the Jolida JD-302B valve amplifier, which employed 12AX7, 12AT7 and EL34 valves), the Modwright KWA 99 is solid-state from input through to output. The output devices are current production Exicon Lateral MOSFETs configured in a conventional Class A/B topology, albeit operated with very high bias to mimic Class A operation.

Wright says that using these MOSFETs results in "unparalleled sound, performance and reliability," while the KWA 99 itself "offers the sound of our best amplifiers with an even greater degree of resolution, detail, and live sound".

Why Wright specifies the use of "current production" Exicon transistors is likely down to their history. You see, Exicon (its name stems from 'EXcellence In SemiCONductors') produced its first lateral MOSFETs (the ECF10N16 and ECF10P16) in 1993 and they became an instant hit

> "...circuit delivers the holographic imaging and tonal warmth of tubes but without any excessive coloration"

with amplifier designers for their high level of performance — though it helped that Hitachi ceased production of its very popular 2SJ50 and 2SK135 MOSFET devices at roughly the same time! Exicon redesigned its range of lateral MOSFETs in 2015, and it is these newer devices that are used in the KWA 99.

One thing I learned when reviewing Modwright's PH 9.0 some years ago, which I believe is well worth repeating here — not least because I had entirely forgotten it myself — is that the Modwright logo reads the same no matter whether you look at it straight on, upside down or even in mirror-reverse. No matter what you do, that stylised 'M' becomes a 'W' and the 'W' becomes an 'M'. They don't make fonts this way so it must have been intentional on Wright's part, or that of his graphic designer. It's neat! I like to think that the two dreamed it up while having a bite in Nick's Bar and Grill, which almost neighbours the Modwright Instruments factory in Amboy, Washington, USA.

IN USE & LISTENING SESSIONS

As there are two separate chassis, there are two power buttons to press, which presented a slight problem for me as those buttons are recessed into the front panel and require being pressed in quite a way to activate. This means that if you, like me, have fat fingertips, you will likely need to use your ring or little finger to press the buttons in far enough to switch the amplifiers on. That said, they can also be powered on remotely, via a 12V trigger socket on the rear panel.

Once powered on, blue LEDs inside the chassis will flash on and off — or to be accurate, flash brightly and then not-so-brightly — for about 30 seconds until the internal circuitry has stabilised and the protection circuitry has established that nothing is amiss (such as a short-circuit on the output terminals, about which more in a moment). When this light show has finished, the LEDs remain on, for no good reason I could establish perhaps other than to improve the amplifier's appearance in a darkened room. These LEDs can, however, be deactivated via the rear-panel micro toggle switch.

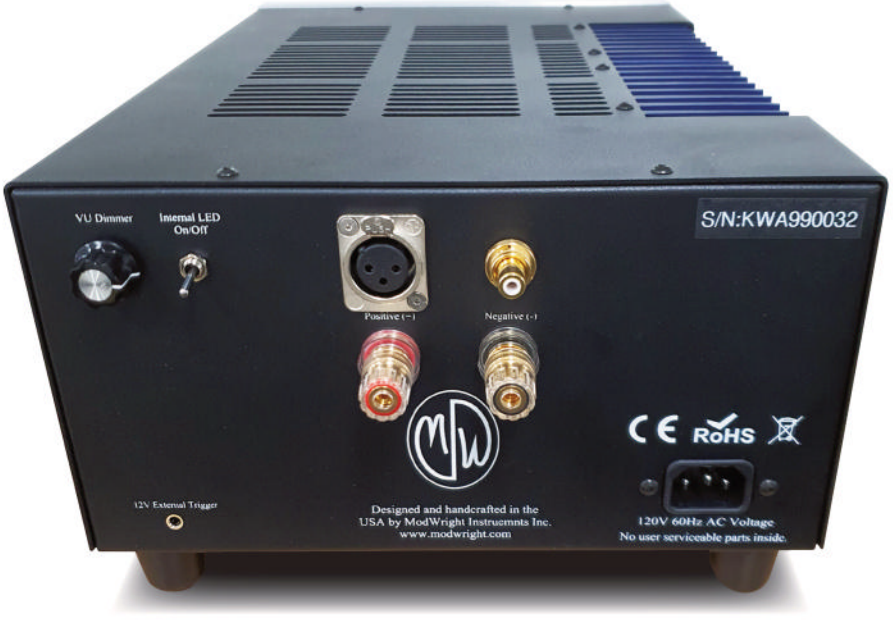
As you can see in the image on the right, the KWA 99's heatsink fins are also blue, which I found rather unusual considering black-anodised heatsinks are the most efficient at dissipating heat from solid-state output devices. It seems that both the blue LEDs and heatsinks were the choice of Wright for the simple reason that, in his own words: "I like blue." I suspect that blue is almost as good as black in terms of thermal efficiency, though I did note that the KWA 99's heatsinks become quite hot, presumably because of the high bias current to the transistors. While I didn't measure the temperature, it was hot enough that it required real willpower to keep my fingers in contact with the metal for more than 10 seconds.

Power output meters are a hotly contested subject because unless your speakers present a constant and defined impedance (which no dynamic speaker does, though a few panel designs do, such as those made by Magnepan), the meters can never give an accurate indication of the power the amplifier is delivering to those speakers. The meters on my KWA 99 review sample were a long way off displaying power output correctly, showing a 25-watt output when the amplifier was delivering only a single watt of power into an 8-ohm load. The needles pinned at maximum when the output power was just 10 watts into an 8-ohm load.

As for the meters themselves, they are very 'low-tech', with a look and design reminiscent of meters from early in the last century. This turned out to be a deliberate design choice by Wright, who posted on Modwright's website that "the amber illuminated power VU meters were chosen for a vintage tone aesthetic that I believe embodies the design concept".

As you can see in the image overpage which shows the meter switched on, this deliberate "vintage tone aesthetic" means that the amber illumination is far brighter at the bottom of the meter than it is at the top; the distribution of light is not uniform across the area of the meter. This disparity remains the case no matter what brightness level you choose, being continuously variable by means of a rotary potentiometer on the rear panel (the maximum anticlockwise position of this control switches the illumination off completely, which I personally preferred). If you look at the image of the KWA 99's rear panel below you will see that Wright also went retro with the design of the rotary dial. I can't remember the last time I saw this type of knob on an electrical component!

Peer closely and you will see that Wright is economising on his chassis inventory by identifying the mains power socket as being 120V/60Hz rather than what it really is here in Australia, which is 230V/50Hz. Peer closer still and you can also see a typographic error in Modwright's company name — "Instruemnts." Oops! I can see why Wright wouldn't want to dump a whole load of pre-screened chassis for a simple spelling mistake that would likely go unnoticed by many owners (unless they've read this review!), but that said, high-quality


VU Dimmer
Internal LED On/Off
S/N:KWA990032
Positive (−)
Negative (-)
12V External Trigger
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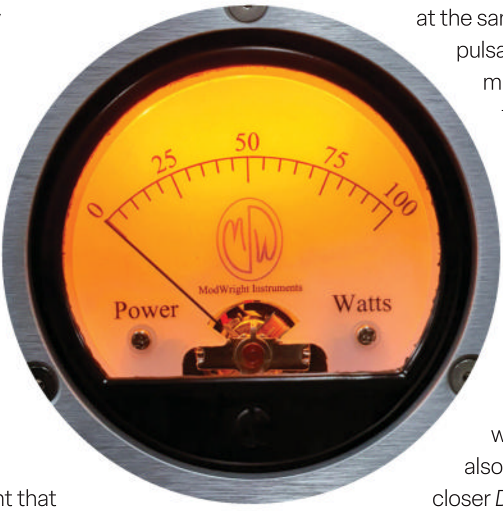
RoHS
120V 60Hz AC Voltage
No user serviceable parts inside.

stickers are not expensive and also could have been used on models destined for 230V/50Hz markets.

You don't have to look closely at the image of the KWA 99's internals (to your right) to see there is an inordinate amount of point-to-point wiring, not least as the components used in the circuitry are distributed across several different printed circuit boards, rather than being contained on one, as is more often the case. The voltage from the large toroidal transformer is smoothed by four 12,000µF/63V storage capacitors, and bear in mind that this means there is a transformer (as well as four capacitors) for each channel.

The KWA 99 circuitry includes DC input and thermal overload protections, as well as short-circuit and over-current protections. Of the latter two circuits, Wright says they are "served by our unique and proprietary Total Silent Protection circuitry which resides outside of the signal path. When protection is triggered, the channel simply mutes. To reset, unplug the power cord wait thirty seconds, re-insert the power cord and power back up." In the event of a thermal overload, meanwhile, the amplifier simply shuts down with no visual or other indications.

Wright suggests that the best preamplifier pairing for the KWA 99 is his own Modwright LS 99 balanced tube model, but as I didn't have one to hand I used a Halcro Eclipse preamp — the sample I reviewed in the previous issue of *Australian Hi-Fi*; sadly I do not own one — for the great majority of my listening sessions.



At the start of any auditioning session, I usually play music at the maximum volume my domestic arrangements will allow to ensure there is sufficient amplifier power on tap to reproduce musical transients without clipping, and it was immediately apparent that the Modwright mono pair would deliver more than sufficient power for any home hi-fi set-up — even those fronted by inefficient loudspeakers like mine.

The pair proved themselves the ideal amplification to reveal the myriad sonic complexities on the debut album by Mk.gee (whose parents named him Michael Gordon), Two Star & the Dream Police. Listening to *How Many Miles*, I was taken by how atmospheric his vocals sounded against the full-wash background. And on *Rylee & I*, the Modwrights impressed with their ability to deliver the very deepest bass with utmost precision whilst fluidly delivering the extreme highs at the same time. The pulsations of the multiple instruments that flavour *I Want* are perfectly pitched and timed, and here were delivered with a sonic warmth that was highly aurally satisfying. This warmth of sound also imbued album closer *Dream police* with an almost ethereal ambience, as well as demonstrating the advantage of having one dedicated amplifier for each of the channels. Indeed, the totality of the channel separation here eludes most single-chassis stereo amplifiers.

It seemed appropriate to follow up Mk.gee with an album from another artist who didn't like the name they were born with — Beatrice Laus, who is better known

MODWRIGHT HISTORY

Dan Wright originally planned a future in journalism, and to that end spent a year in Australia as an exchange student. On his return to the USA, however, he decided against journalism and instead enrolled in a computer engineering course at Anchorage University in Alaska. He later switched courses and universities to graduate from Fairbanks University with an honours degree in Mechanical Engineering. Taking advantage of his qualifications, Wright began a career as a professional engineer specialising in heating and ventilation systems.

However, having long been interested in designing and building audio equipment, Wright deployed his multiple skills to develop a part-time business improving existing audio products by upgrading various components within them, such as op-amps, resistors and capacitors. He also modified and improved the power supplies inside various other products, hence the company name, 'Mod' Wright.

Despite this side business becoming quite large and relatively profitable, Wright was operating out of his basement. But everything changed for him when Perpetual Technologies (owned by Mark Schifter and Peter Madnick of Audio Alchemy) got wind of the modifications he was making on its P3A DAC and gave him an exclusive licence to perform mods that were not only approved by Perpetual Technologies but also did not invalidate the product warranty. It was this encouragement from Schifter and Madnick, and the boost this licensing arrangement delivered to his business, that convinced Wright he should quit his day job, make Modwright a legal entity and launch it as a full-time business, which indeed he did in 2000.

As well as modifying the P3A DAC, he also offered a valve output stage for the Sony CDP-777ES CD player. It wasn't until three years later, in 2003, that he released his first product, the SWL9.0SE preamplifier (as discussed in this review). Modwright no longer offers modifications, although it does sell 'house-brand' capacitors, designed by Wright, that he recommends for use in power supply decoupling and the bypassing of electrolytic capacitors, as well as for output coupling capacitors in pre or power amplifier applications. "The M Series Truth capacitors are made with a proprietary oil-impregnated metalized polypropylene dielectric with pure copper-tinned leads," says Wright. "They offer body, weight and exceptional clarity without the softness or overly warm presentation of other oil or paper in oil capacitors on the market."

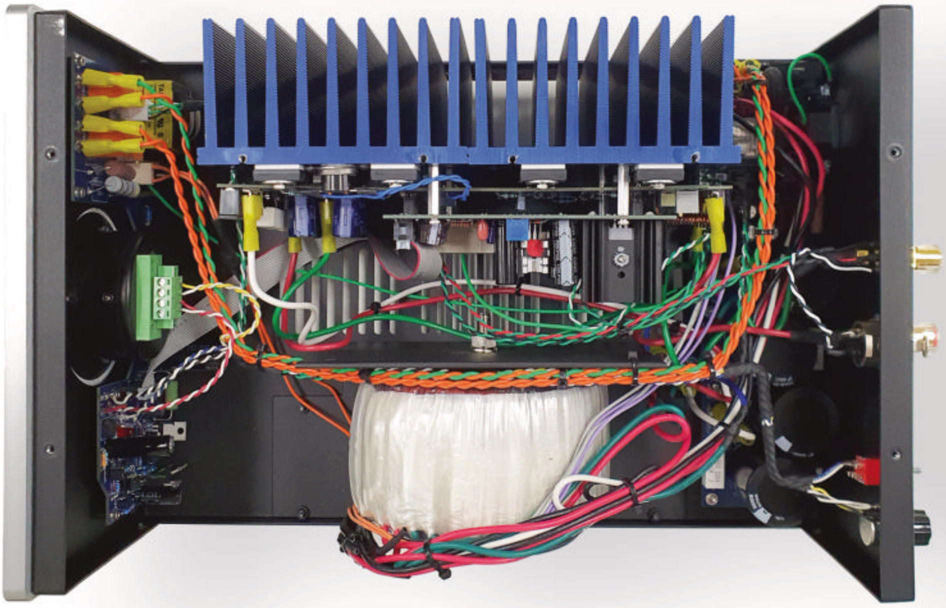
by her professional name, Beabadoobee. Her album This Is How Tomorrow Moves benefits enormously from the production by Rick Rubin, but at the same time it may well be the first album I've come across where the number of technicians involved in producing (16!) it exceeded the number of musicians playing on it (10). Intro track *Take a Bite* sets the sonic tone for the album, with a full and lush soundscape whose tonal richness was again enhanced by the warmth of the Modwright KWA 99's character. The bounce-channel sound effects on *California* again demonstrated the infinite channel separation on offer from this duo, along with a reminder of their impressive bass depth and precision.

The intimacy of the presentation on *Coming Home* reflects the lyric, while the accuracy of the guitar sound is astounding, not least because of the way it contrasts with Beabadoobee's breathy 'little girl' vocals — all attributes that are reprised on the following track, *Ever Seen*.

To evaluate the Modwrights' delivery of a female vocal, I span up one of my favourite albums of the past decade, Hayley Willams' Petals for Armor. Everything about this album is outrageously good — her voice, her lyrics, the musicianship of everyone who contributed, plus a special mention for the album's state-of-the-art production. This is one album you should most definitely purchase in its unadulterated 24-bit/96kHz FLAC livery. It will become not only a favourite for the music itself but also as a test album, to use over and over again to evaluate audio components — it's that good! And if you only know Williams from her previous work fronting pop-punk outfit Paramore, this solo debut of hers will be a revelation.

The album's opener, *Simmer,* is best known for its many obscenities, both real and implied, but it deserves to be most renowned for its beat-perfect drumming (Aaron Steele) and inventive bass lines (Joey Howard). The syncopation of *Leave It Alone* is superb, too — and superbly delivered by the Modwrights — and the sound of the unison guitar strings is as rich and detailed as a medieval tapestry, once again satisfyingly enhanced by the lushness of the KWA 99's presentation. *Cinnamon*, which follows, will afford you the opportunity to hear that the Modwrights are quiet in those 'spaces between the notes'; you will hear no noise from the circuitry, just silence. The same is true of *Dead Horse*, where you can again hear the magnificent bass and some pretty impressive percussion. (The lyric is pretty funny too!) Also hugely impressive are the vocal deliveries on *Roses/Lotus/Violet/ Iris*, a track that adds backing vocals from Phoebe Bridgers, Julien Baker and Lucy Dacus to Williams' own multi-tracked vocals. I was so impressed by how distinctly the Modwrights distinguished between the singers' deliveries.

> ... their ability to deliver the very deepest bass with utmost precision whilst fluidly delivering the extreme highs...



CONCLUSION

All in all, the new KWA 99 power amplifiers are a triumph. They deliver that classic Modwright sound in a smaller and arguably more elegant package than the company's more powerful and modern-looking KWH 225i hybrid integrated amplifier, which sells for only a few hundred dollars more.

Greg Borrowman

SPECS & CONTACT

Design: Class A/B (high Class A bias)
Power Output: 100W (8 ohms); 200W (4 ohms)
Frequency Response: 10Hz–150kHz (–1dB)
Signal-to-noise ratio: 90dB (unweighted)
THD: <0.05%
Input: RCA, XLR
Input Impedance: 47kohms
Gain: 26dB
Dimensions (HWD): 15 x 25 x 38cm (inclusive of footers and binding posts)
Weight: 13.2kg
Warranty: Five years

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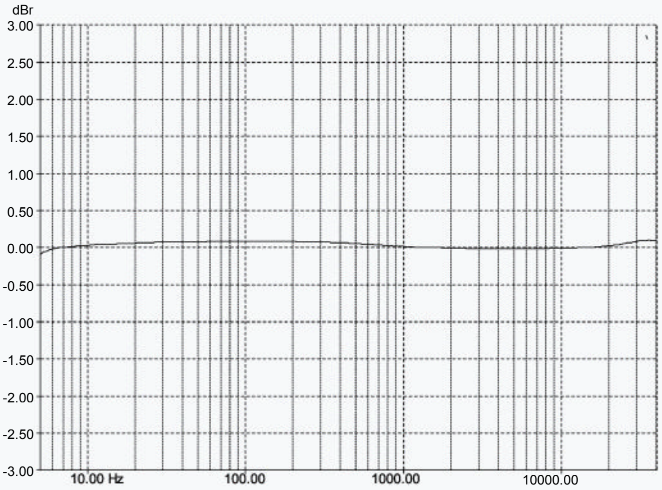
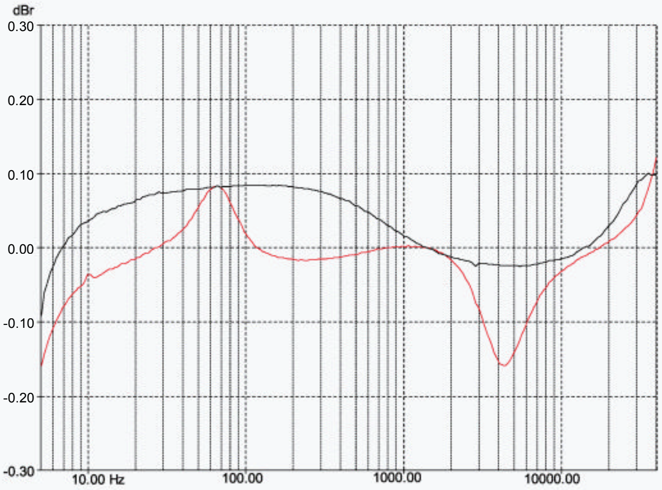
T: (04) 8877 7999
E: info@absolutehiend.com
W: www.absolutehiend.com

Readers interested in a full technical appraisal of the performance of the Modwright KWA 99 Mono Power Amplifier should continue on and read the **LABORATORY TEST REPORT** published on the following page. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

Laboratory Test Report



Graph 1. Frequency response into an 8-ohm non-inductive load



Graph 2. Frequency response into an 8-ohm non-inductive load (black trace) and into a simulated loudspeaker load (red trace). Note the expanded vertical scale of the graph

Newport Test Labs' measurements showed the KWA 99's power output as being above its specification: the lab measured its output at 123 watts into an 8-ohm load (23 watts more than Modwright's 100-watt spec) and 228 watts into a 4-ohm load (28 watts higher than Modwright's 200-watts spec). Although this test was at 1kHz, power output remained above specification at both 20Hz and 20kHz, with the KWA 99 delivering 120 watts and 210 watts at both frequencies into 8 and 4 ohms respectively.

Frequency response was extended, with *Newport Test Labs* measuring the high-frequency 1dB down-point at 150kHz and the 3dB down-point at 210kHz. The response across the audio band was very flat, as you can see from Graph 1, the trace on which showing the KWA 99's performance into a standard non-inductive 8-ohm laboratory test load.

Newport Test Labs also measured the frequency response when the KWA 99 was driving a test load that simulates what would be presented by a two-way bass-reflex loudspeaker, the result of which is depicted by the red trace on Graph 2. Note that the vertical scale of this graph has been magnified so that the top of the graph is at +0.3dB and the bottom is at –0.3dB. You can see that the trace into an 8-ohm load is within ±0.1dB for the upper and lower graphing limits of 5Hz and 40kHz, and across the audio band the response is even better: 20Hz to 20kHz ±0.05dB. You can see that the trace into the simulated load is not quite as constrained, but the response across the entire band is still a superb 20Hz to 20kHz ±0.12dB.

Total harmonic distortion (THD) was measured at 0.02% at a one-watt output, which is very slightly better than Modwright's specification of 0.05%. The distortion components present to give this percentage were primarily the good-sounding second and third harmonics, too.

Newport Test Labs measured the signal-to-noise ratio of the KWA 99 as being exactly on-spec at 90dB unweighted when the noise was referred to the amplifier's rated output (100 watts). The S/N ratio improved to 92dB when A-weighting was applied. Interestingly, Modwright specifies an unweighted noise figure, given that A-weighting always results in higher (read: better) numbers.

Output impedance was measured as being 0.14 ohms at 1kHz, resulting in a damping factor (DF) figure of 57, which is notable for two reasons: for being a higher figure than none other than Floyd E. Toole established as being the minimum required to deliver perfect damping (that figure being 30), and for being a result I more typically see from valve rather than solid-state designs.

Overall, the Modwright KWA 99 power amplifier equalled or exceeded its specifications for the tests conducted on it by *Newport Test Labs*. **_Steve Holding_**

Modwright KWA 99 Mono Power Amplifier – Laboratory Test Results

Test	Measured Result	Units/Comment
Frequency Response @ 1 watt o/p	2Hz – 150kHz	–1dB
Frequency Response @ 1 watt o/p	2Hz – 210kHz	–3dB
Power Output into 8 ohms	123=watts	@ 1kHz
Power Output into 4 ohms	228-watts	@ 1kHz
Gain	26dB	
THD+N	0.02%	@ 1 watt
Signal-to-Noise Ratio (unwghted/wghted)	90dB / 92dB	dB referred to rated output
Input Sensitivity 1	136mV	for 1 watt out
Input Sensitivity 2	1.34V	for 100 watts
Output Impedance	0.14Ω	@ 1kHz
Damping Factor	57	@ 1kHz
Mains Voltage Variation during Test	233– 241V	Minimum – Maximum

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2	Receive reliable personal advice	Bit of a lottery on the advice front	No advice
3	Expect to be asked about your needs and music	Expect to be asked about your budget	No filtering questions
4	Listen in a room environment before you buy	Listen over a noisy shop floor if you can listen at all	No listening
5	Have a nice coffee	There's a coffee shop three doors down in the Mall, mate	Make your own
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7	Get a full warranty with local return point	Be offered an extended warranty you probably don't need	Warranty possibly void in Australia
8	After-sales service	After-sales what?	After-sales what?
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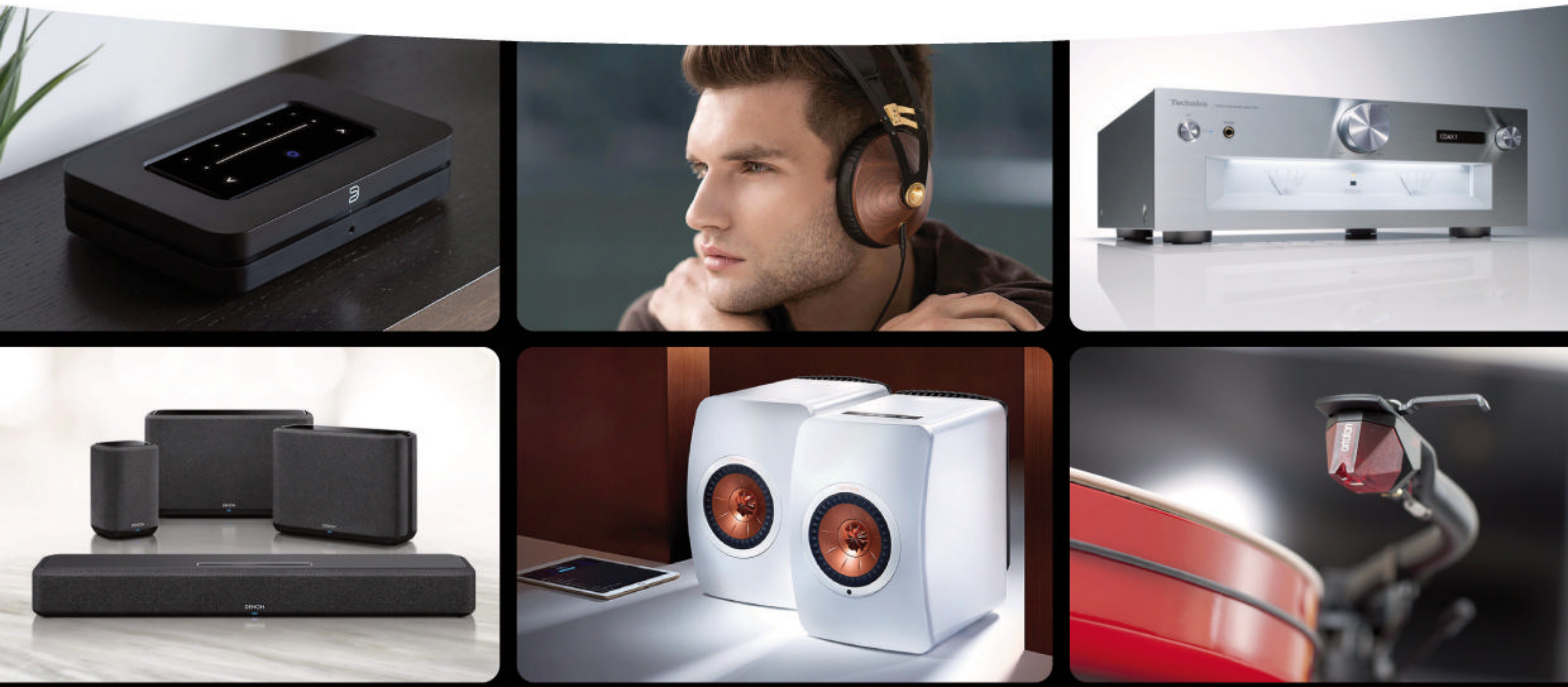

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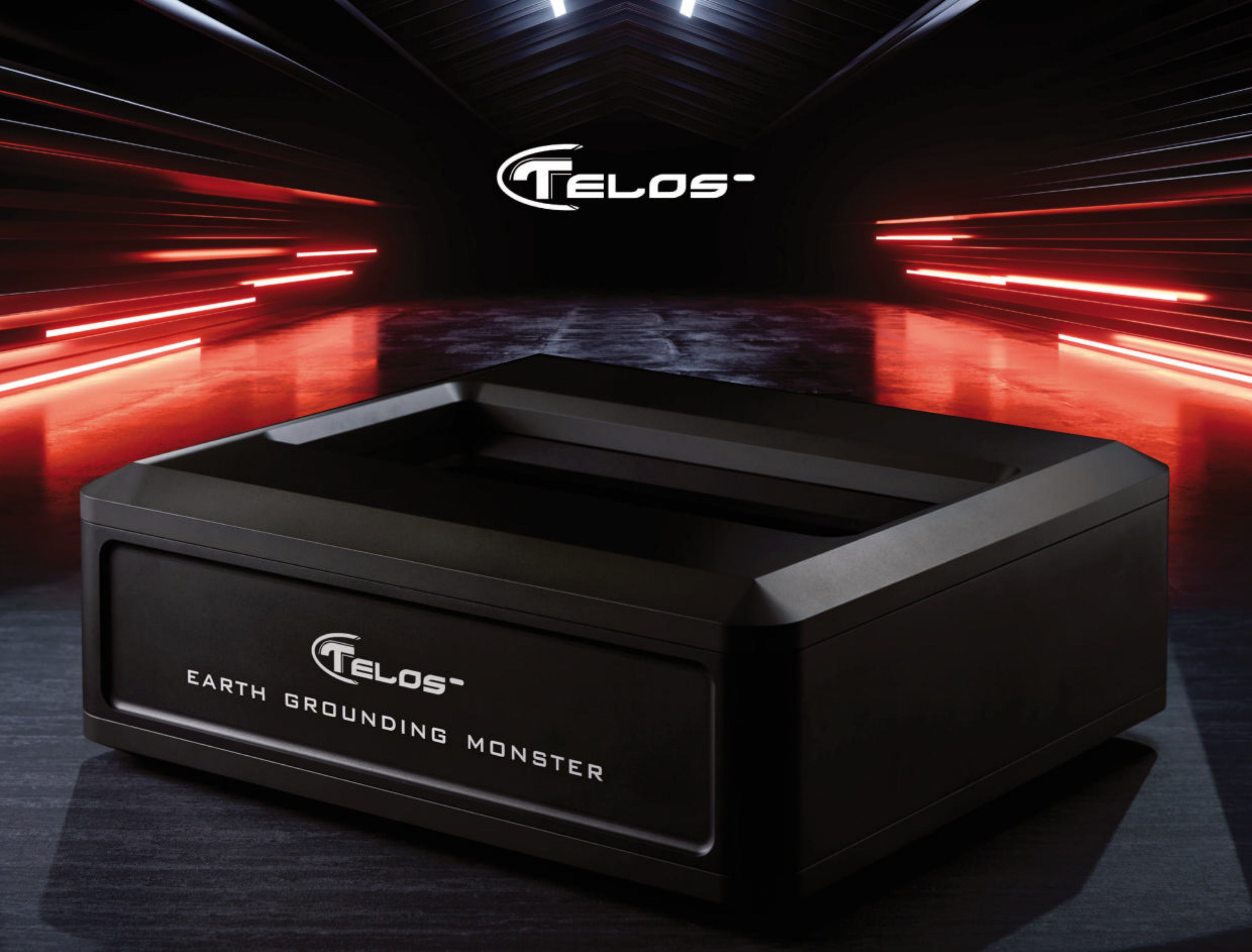

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Dohmann Helix 2 mk3

This outstanding turntable is in a class of its own. It was designed, engineered, and built in Australia—yes, built in Australia. It is absolutely world-class. Every piece of vinyl played on it is an experience. The world shuts down while the music courses through your body from your ears to your toes. Armed with a Supatrak blackbird tonearm and equipped with a Mutech Hyabusa Moving coil cartridge, it is ready and able to express every note and emotion of your music.

Airtight AMT-1E 2024

This incredible 28w-per-side Japanese tube power amplifier has been handcrafted since 1986. It uses custom power transformers and hand-selected EL34 tubes. The 2024 designation refers to the fact that they have finally updated their transformer design for the first time in four decades. This amplifier exudes so much musical emotion that you will be engaged from the first note you hear. It comes with a single input and a pair of attenuated volume controls on the front, allowing it to be used as an integrated amplifier for single-source systems.

Fischer & Fischer SN470M – with AMT Tweeter

Built in Germany from Germany. These incredible speakers are made from Slate mined 300 ft below a mountain near Cologne, Germany. The slate, unlike any other speaker cabinet, creates a resonance-free chamber for the speaker drivers to work in. Slate is made from layers of ancient mud and silt that have hardened over vast eons of time. The multiple density of the layers keeps the sound in the box and doesn't waste precious energy like reverberant boxes. These speakers utilise Mungdorf componentry and their legendary AMT (air motion transducers). The rest of the speaker components are all custom-built by Fischer & Fischer.

This speaker is a joy to listen to. Anyone at this price point would benefit from making the time to hear them before making their final decision.

Come to HeyNow Hi-Fi's room at the Sydney Hi-Fi Show to experience all of this amazing kit and meet Geoff Haynes; You may have purchased from him over the years. A great opportunity to say hi. The creator of the Dohmann turntable will also be in the room spinning records and presenting his ideas on turntable design.

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FUTURE

15 BRILLIANT TRACKS TO TEST BASS

Everybody loves bass, right? Low frequencies don't just move a substantial mass of air, they are also crucial when it comes to music moving you both emotionally and even physically. Nothing makes you feel more alive than a proper bass blow to your stomach. That said, ribcage-rattling power and volume aren't everything, so this collection of songs also showcases bass subtlety, agility and detail...

Ini Kamoze

World-A-Music

You can't talk about bass without talking about reggae. A much-sampled bassline and track, this Sly and Robbie production is designed to be heard on a sound system that can push some serious air. From the simple but effective school, you want to hear solid, rounded bass notes that stop and start cleanly and don't muddy the midrange. Red Stripe lager optional.

GoGo Penguin

Raven

GoGo Penguin is impossible to pigeonhole. Marrying jazz riffs, breakbeats and epic melodies, the Manchester band delivers stadium-ready tracks that are at once staggeringly complex and instantly accessible. The bassline on *Raven* is a rapid, twitching, rollercoaster ride of a double bass blowout, requiring no small level of attention to follow as it dances around a grand piano riff and scattergun drums.

SO WHAT?
MILES DAVIS

Miles Davis

So What

One of the key questions a good sound system needs to answer is, do the instruments sound like instruments? If you want to check, this is a great track to use, not least when it comes to the upright bass. Each note has attack, decay, reverb, dynamics and subtle details that the best systems will deliver untainted. If you can hear the size of the room and almost taste the smoke in the air, your system has passed this test.

CREAM
BADGE
WHAT A BRINGDOWN

Cream

Badge

Eric Clapton and George Harrison wrote it, Jack Bruce delivered the iconic bassline. Certainly considered one of the greatest bass guitarists of all time, it's Jack's nimble, bouncing bass riff that gives this track its energy and drive. The quick notes will test your system's dynamics. They should stop and start on time to avoid slowing the song down and ensure the track is nicely balanced and light on its feet, despite the depth and weight of the bass licks.

MUSE
HYSTERIA

Muse

Hysteria

One thing's for sure, you're better off listening to this bassline than trying to play it. Muse favour overdriven, slightly fuzzy bass parts and that roughness around the edges will find out just how insightful your system is. The wall of sound production will have you pinned to your chair, but hear it at its best and you should be able to discern plenty of detail in the mire.

Thundercat

Uh Uh

An unassuming intro gives way to a frantic, two-minute finger workout for Stephen Lee Bruner, AKA Thundercat, a man so handy on the bass that we've granted him the honour on appearing on this list twice. As well as working his bass guitar and songwriting magic for the likes of Erykah Badu and Flying Lotus, Thundercat has, to date, delivered three studio albums of genre-bending, jazz-fused funk. *Uh Uh* is typically freeform and provides a test of timing, rhythm and insight as the bassline runs up and down the musical scale at a fast, erratic pace.

Gorillaz (ft. Thundercat)

Cracker Island

We don't have much of a clue what Damon Albarn or his alter-ego 2D are going on about during *Cracker Island*, and it's not made much clearer by the rather impenetrable accompanying music video. All we know is that the title track from 2023's hugely enjoyable release is a doozy thanks to its catchy vocal hook and, most importantly, Thundercat's noodling bass line bubbling beneath the surface.

Photek

The Hidden Camera

Atmospheric, technical drum 'n' bass from Photek's revered debut album. While the genre might now favour noisier, distorted basslines, this track features a more authentic double bass sound, giving the bassline real texture and subtlety. There's plenty of weight, too, with complex drum patterns in the top end, so the bass shouldn't overload the mix. There's a lovely warmth to the rounded bass notes, which should come across on a good system.

Chic

Good Times

"A bass riff that made HISTORY!", reads the top comment on this YouTube video. And they're not wrong. The *Wikipedia* list of songs that sample this track currently stretches to 27, and it's labelled as "incomplete". Not all famous basslines make for a useful test track but we think this one certainly passes the test. There's more variation in length and attenuation to notes than you might notice at first listen, which require a little digging out, while some systems just won't muster the necessary spring and rhythm.

Anton Bruckner

Symphony No.7

An hour of huge peaks and troughs that will test dynamics and control, alongside just about every other aspect of your system's musicality. Tubas and timpanis, double basses and oboes, there's a huge range of sounds vying for attention, especially at the bottom end of the spectrum. The second and third movements are particularly likely to trouble your bass drivers.

Hans Zimmer

Time

There are almost as many layers to this track as there are to *Inception*, the film in which this track appeared. Zimmer has a hefty back catalogue of stirring soundtracks but when it comes to bass weight and detail, coupled with stirring dynamics for good measure, few do it better than *Time*. This should really fill your room and the move from mezzo to forte should be enough to bring a bead of sweat to your forehead — without a firm handle on the vigorous strings, your system's delivery will fall flat.

Igor Stravinsky

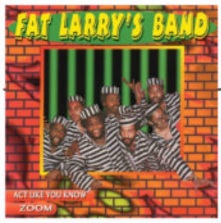
The Rite of Spring

You might need to towel yourself down after this one, such is the power on show. Stravinsky himself referred to the end of this piece as "a noise", and who are we to argue? It certainly builds to a cacophony of instruments, with ominous, pounding drums keeping the focus as the rest of the orchestra seemingly battles for supremacy. Angry strings and rasping brass demand power and precision, and probably an apology to your neighbours.

Massive Attack

Angel

A brilliant, brooding bass riff from the British trip-hop kings. The group aren't short of songs that could have made this list, but we love the way this slow-burner looms into view, shifting through the gears as the track progresses, the bass note opening up, changing texture and getting louder by the end. A lovely workout for a subwoofer.



Fat Larry's Band

Act Like You Know

An instantly recognisable slice of early 80s funk, thanks in no small part to its fat slap of a bassline. Sliding up and down the bottom end of the frequency spectrum, the plucked bass notes should sound punchy, natural and full of detail. The vocals and keys make for a nice juxtaposition at the other end of the range, too.

Rage Against The Machine

Bullet in the Head

Rage Against The Machine's brand of funk-metal lends itself perfectly to loud, powerful, low-strung bass riffs. This example sees bassist Tim Commerford taking it easy with a workmanlike contribution... before switching it up for a couple of minutes of shredding. An insightful system will pick out plenty of detail in the neck-breaking finale — you should be able to hear the slap of the strings, not just a wall of noise, especially when the extra layers of guitar come into the mix.

the verve
This Is Music: The Singles
verve

The Verve

This Is Music: The Singles

UMR

There's always been a boldness to The Verve's attitude: titling their 2004 singles compilation This Is Music, after its opening track, was intended as a brash, definitive statement, rendering all other sound unworthy. This vinyl anniversary reissue, with its original bonus tracks now replaced with the two singles from 2008's reunion album Forth, has lost absolutely none of its bravado over the past two decades.

Its first three tracks lay out The Verve's initial evolution, albeit non-chronologically. *This Is Music*, representing 1995's second album A Northern Soul, thunders in on tides of swirling psych-rock that sound like Led Zeppelin and Jimi Hendrix battling for supremacy over an alternative dimension in which it is forever — hazily — 1969, with singer Richard Ashcroft, a disembodied voice within the storm, singing about working-class glory. *Slide Away*, a firestorm behind glass, showcases the gentler, frictionless shoegaze that characterised much of their 1993 debut A Storm In Heaven, and then *Lucky Man* exemplifies the string-stroked acoustic rock of 1997's Urban Hymns. On this evidence alone you might expect A Northern Soul, rather than Urban Hymns, to have been their mega-platinum peak, and its material continues to crush everything around it for at least two discs. The austere, monolithic *History*, for example, is a pointer to what's to come, its hem merely brushed by the kaleidoscopic blues of *Blue*, Spandau Ballet mimic *Sonnet* or the romantic lustre of *She's A Superstar*, a nine-minute glide over sonic war zones.

The band's confidence stretches as far as saving their best songs for the latter half. Here, hallucinogenic early single *All In The Mind* scuttles towards a frenzied take-off, Eastern textures bringing the mystique. *The Drugs Don't Work* and *Bitter Sweet Symphony* mark the magnificent culmination of the band's development, the former a sublimely wistful, beautifully judged addiction ballad, the latter grandiose indie pop at its very finest, even if the Rolling Stones took much of the credit (and cash). The inclusion of Forth's already dated electro-rocker *Love Is Noise* only lessens The Verve's historic standing, sounding like a band chasing modern relevance rather than being born leaders. But, even revisited 20 years on, there's still enough meteoric noise here to leave a formidable crater in the rock landscape.

G3

Reunion Live

earMUSIC

G3
REUNION LIVE
JOE SATRIANI / ERIC JOHNSON / STEVE VAI

Twenty-eight years after Joe Satriani put together the first G3 tour, he reunited with the other two guitarists — Steve Vai and Eric Johnson — for a US tour last year. The G3 concept, which for a while in the early 2000s was an annual event with a varying cast, had lain dormant for the previous six years, so there is a sense of coming full circle. Listening to three axemen, who were in their prime, on the first G3 tour playing their respective sets with the same skill and dedication in their mid-to-late 60s is an almost humbling experience. Johnson's set is perhaps the most intriguing because he has remained the most inscrutable and elusive of the three, not to mention being the oldest at 70. Only their encore choices give away their ages: *Crossroads* as done by Cream, Hendrix's *Spanish Castle Magic* and Steppenwolf's *Born To Be Wild*.

Black Eyed Sons

Cowboys In Pinstriped Suits

OFF YER ROCKA

BLACK EYED SONS
cowboys in pinstriped suits

Sprung from the ashes of the Quireboys fall-out (singer Spike on one side, guitarist Guy Griffin the other), this debut from the newly minted Black Eyed Sons begins exactly as you might imagine: a Stonesy-sounding romp titled *Lie To Me*. And while familiarity might breed contempt, arrest your expectations, as what follows, with the help of artists like Joe Elliott and Charlie Starr, is a glimmering mix of country, glam and rock'n'roll. Highlights include Elliott's Mott-like title track, Mike Tramp helping out on the Jayhawks-sounding *Your True Colours*, Starr's country-like lament *Autumn Reigns*, and Dan Reed helping out on the keening *So Glorious*. Admittedly a lot of it wouldn't have been written had the Stones not made Exile, but there are hidden songwriting depths here that go beyond an address book of famous friends. This is a promising debut album from the established British rock'n'rollers.

Iggy Pop

Live At Montreux Jazz Festival

earMUSIC

IGGY POP
Montreux Jazz Festival 2023

If the notion of over-familiarity may preclude the desire to dive into an Iggy Pop live album, then be prepared to think again. Recorded in Switzerland's Auditorium Stravinski in 2023, the then 75-year-old punk progenitor and his five-piece band are augmented by a trombonist and trumpet player and the effect is akin to hearing him refreshed and anew. The horns are particularly simpatico during spirited opener *Five Foot One*, where their punctuating stabs increase in intensity much like the free jazz that partly inspired him back in the 60s, and perennial favourite *The Passenger* bounces with their boost. But credit to Iggy for the deep dives that are brought to the fore. The Stooges' *Sick Of You* is exhumed to glorious effect, and the woozy *Mass Production* and creeping *Endless Sea* feel like siblings separated by albums. Iggy is in fine voice throughout, raising a middle finger to both age and doubters.

Andy Fairweather Low

The Invisible Bluesman

LAST MUSIC COMPANY

ANDY FAIRWEATHER LOW
THE INVISIBLE BLUESMAN

Given his collaborators over the decades — Eric Clapton, John Mayall, BB King — the notion that Andy Fairweather Low has never previously released a solo blues album seems like a glitch in the matrix. Yet it's true. But while this largely live covers set doesn't necessarily flex the Welsh guitarist's creative muscles, it confirms him as a musician who has the genre under his fingernails. The album takes a moment to get going. Opener *My Baby Left Me* is low-octane and a little polite, all strummed acoustics and brushed drums. But something brilliant happens halfway through *Gin House Blues*, with the guitarist firing off a raunchy electric solo, and with the amp valves finally glowing hot the album is off to the races. *Baby What You Want Me To Do* packs a nasty fuzz tone. *Mystery Train* has the clickety-clack velocity of a 20-something garage band. Fairweather Low's hollered vocal on *Bright Lights, Big City* suggests his throat will hurt in the morning.

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